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A

HISTORY
OF
NORTH AMERICAN BIRDS

BY
S. F. BAIRD, T. M. BREWER, AND R. RIDGWAY

LAND BIRDS

ILLUSTRATED BY 64 PLATES AND 593 WOODCUTS

VOLUME I.



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PREFACE.

THE present work is designed to meet the want, which has long been felt, of a descriptive account of the Birds of North America, with notices of their geographical distribution, habits, methods of nesting, character of eggs, their popular nomenclature, and other points connected with their life history.

For many years past the only systematic treatises bearing upon this subject have been "The American Ornithology" of Alexander Wilson, finished by that author in 1814, and brought down to the date of 1827 by George Ord; the "Ornithological Biography" of Audubon, bearing date of 1838, with a second edition, "Birds of America," embracing a little more of detail, and completed in 1844; and "A Manual of the Ornithology of the United States and Canada," by Nuttall, of which a first edition was published in 1832 and a second in 1840. Since then no work relating to American Ornithology, of a biographical nature, has been presented to the public, with the exception of some of limited extent, such as those of Giraud, on the "Birds of Long Island," in 1844; De Kay's "Birds of New York," 1844; Samuels's "Ornithology and Oölogy of New England," 1868, and a few others; together with quite a number of minor papers on the birds of particular localities, of greater or less moment, chiefly published in periodicals and the Proceedings of Societies. The reports of many of the government exploring parties also contain valuable data, especially those of Dr. Newberry, Dr. Heermann, Dr. J. G. Cooper, Dr. Suckley, Dr. Kennerly, and others.

More recently (in 1870) Professor Whitney, Chief of the Geological Survey of California, has published a very important volume on the ornithology of the entire west coast of North America, written by Dr. J. G. Cooper, and containing much original detail in reference to the habits of the western species. This is by far the most valuable contribution to the biography of American birds that has appeared since the time of Audubon, and, with its typographical beauty and numerous and excellent illustrations, all on wood and many of them colored, constitutes one of the most noteworthy publications in American Zoölogy.

Up to the time of the appearance of the work of Audubon, nearly all that was known of the great region of the United States west of the Missouri River was the result of the journey of Lewis and Clark up the Missouri and

across to the Pacific Coast, and that of John K. Townsend and Mr. Nuttall, both of whom made some collections and brought back notices of the country, which, however, they were unable to explore to any great extent. The entire region of Texas, New Mexico, Colorado, Arizona, Nevada, and California was unvisited, as also a great portion of territory north of the United States boundary, including British Columbia and Alaska.

A work by Sir John Richardson, forming a volume in his series of "*Fauna Boreali-Americana*," in reference to the ornithology of the region covered by the Hudson Bay Company's operations, was published in 1831, and has been much used by Mr. Audubon, but embraces little or nothing of the great breeding-grounds of the water birds in the neighborhood of the Great Slave and Bear Lakes, the Upper Yukon, and the shores of the Arctic coast.

It will thus be seen that a third of a century has elapsed since any attempt has been made to present a systematic history of the birds of North America.

The object of the present work is to give, in as concise a form as possible, an account of what is known of the birds, not only of the United States, but of the whole region of North America north of the boundary-line of Mexico, including Greenland, on the one side, and Alaska with its islands on the other. The published materials for such a history are so copious that it is a matter of surprise that they have not been sooner utilized, consisting, as they do, of numerous scattered biographies and reports of many government expeditions and private explorations. But the most productive source has been the great amount of manuscript contained in the archives of the Smithsonian Institution in the form of correspondence, elaborate reports, and the field-notes of collectors and travellers, the use of which, for the present work, has been liberally allowed by Professor Henry. By far the most important of these consist of notes made by the late Robert Kennicott in British America, and received from him and other gentlemen in the Hudson Bay Territory, who were brought into intimate relationship with the Smithsonian Institution through Mr. Kennicott's efforts. Among them may be mentioned more especially Mr. R. MacFarlane, Mr. B. R. Ross, Mr. James Lockhart, Mr. Lawrence Clark, Mr. Strachan Jones, and others, whose names will appear in the course of the work. The especial value of the communications received from these gentlemen lies in the fact that they resided for a long time in a region to which a large proportion of the rapacious and water birds of North America resort during the summer for incubation, and which until recently has been sealed to explorers.

Equally serviceable has been the information received from the region of the Yukon River and Alaska generally, including the Aleutian Islands, as supplied by Messrs. Robert Kennicott, William H. Dall, Henry M. Bannister, Henry W. Elliott, and others.

It should be understood that the remarks as to the absence of general works on American Ornithology, since the time of Audubon, apply only to the life

history of the species, as, in 1858, one of the authors of the present work published a systematic account of the birds of North America, constituting Vol. IX. of the series of Pacific Railroad Reports; while from the pen of Dr. Elliott Coues, a well-known and eminent ornithologist, appeared in 1872 a comprehensive volume, entitled "A Key to North American Birds," containing descriptions of the species and higher groups.

The technical, or descriptive, matter of the present work has been prepared by Messrs. Baird and Ridgway, that relating to the *Raptores* entirely by Mr. Ridgway; and all the accounts of the habits of the species are from the pen of Dr. Brewer. In addition to the matter supplied by these gentlemen, Professor Theodore N. Gill has furnished that portion of the Introduction defining the class of birds as compared with the other vertebrates; while to Dr. Coues is to be given the entire credit for the pages embracing the tables of the Orders and Families, as well as for the Glossary beginning on page 535 of Vol. III.

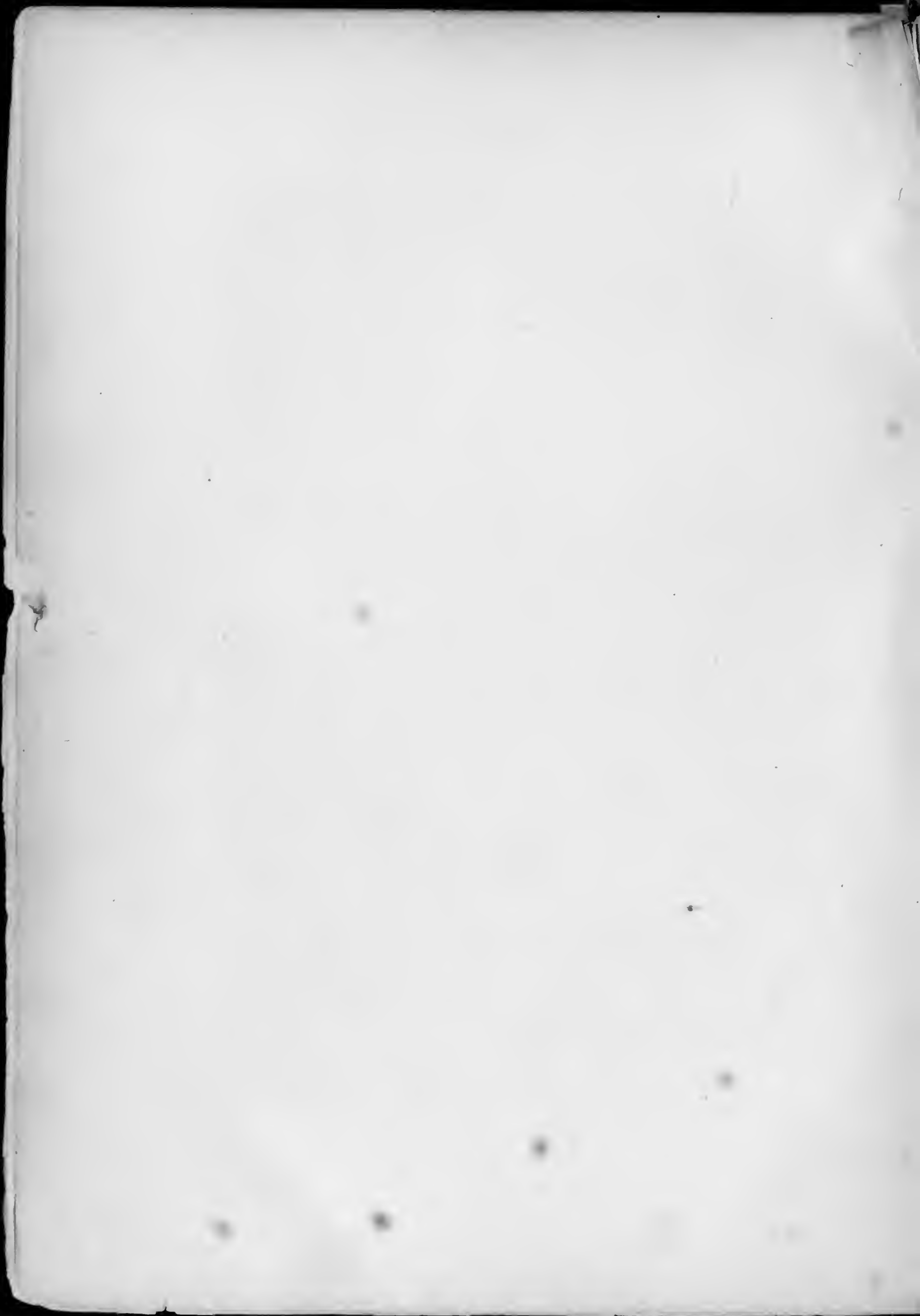
Nearly all the drawings of the full-length figures of birds contained in the work were made directly on the wood, by Mr. Edwin L. Sheppard, of Philadelphia, from original sketches taken from nature; while the heads were executed for the most part by Mr. Henry W. Elliott and Mr. Ridgway. Both series have been engraved by Mr. Hobart H. Nichols of Washington. The generic outlines were drawn by Anton L. Schönborn, and engraved by the peculiar process of Jewett, Chandler, & Co., of Buffalo. All of these, it is believed, speak for themselves, and require no other commendation.

A considerable portion of the illustrations were prepared, by the persons mentioned above, for the Reports of the Geological Survey of California, and published in the volume on Ornithology. To Professor Whitney, Chief of the Survey, acknowledgments are due for the privilege of including many of them in the present History of North American Birds, and also for the Explanation of Terms, page 526 of Vol. III.

A few cuts, drawn by Wolf and engraved by Whymper, first published in "British Birds in their Haunts," and credited in their proper places, were kindly furnished by the London Society for the Diffusion of Christian Knowledge; and some others prepared for an unpublished volume by Dr. Blasius, on the Birds of Germany, were obtained from Messrs. Vieweg and Son, of Braunschweig.

The volume on the Water Birds is in an advanced state of preparation, and will be published with the least possible delay.

SPENCER F. BAIRD.



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INTRODUCTION.

THE class of Birds (*Aves*), as represented in the present age, of the world, is composed of very many species, closely related among themselves and distinguished by numerous characters common to all. For the purposes of the present work it is hardly necessary to attempt the definition of what constitutes a bird, the veriest tyro being able to decide as to the fact in regard to any North American animal. Nevertheless, for the sake of greater completeness, we may say that, compared with other classes,¹ Birds are abbranchiate vertebrates, with a brain filling the cranial cavity, the cerebral portion of which is moderately well developed, the corpora striata connected by a small anterior commissure (no corpus callosum developed), prosencephalic hemispheres large, the optic lobes lateral, the cerebellum transversely multifissured; the lungs and heart not separated by a diaphragm from the abdominal viscera; aortic arch single (the right only being developed); blood, with nucleated red corpuscles, undergoing a complete circulation, being received and transmitted by the right half of the quadrilocular heart to the lungs for aeration (and thus warmed), and afterwards returned by the other half through the system (there being no communication between the arterial and venous portions); skull with a single median convex condyle, chiefly on the basi-occipital (with the sutures for the most part early obliterated); the lower jaw with its rami ossifying from several points, connected with the skull by the intervention of a quadrate bone (homologous with the malleus); pelvis with ilia prolonged in front of the acetabulum, ischia and pubes nearly parallel with each other, and the ischia usually separated: anterior and posterior members much differentiated; the former modified for flight, with the humerus nearly parallel with the axis of the body and concealed in the muscles, the radius and ulna distinct, with two persistent carpal bones, and two to four digits; the legs with the bones peculiarly combined, (1) the proximal tarsal bones coalescing with the adjoining tibia, and (2) the distal tarsal coalescing with three (second, third, and fourth) metatarsals (the first metatarsal being free), and forming the so-called tarso-metatarsus; dermal appendages developed as feathers: oviparous, the eggs being fertilized within the body, excluded with an oval, calcareous shell, and

¹ We are indebted to Professor Theodore N. Gill for the present account of the characteristics of the class of Birds as distinguished from other vertebrates, pages XI - XV.

hatched at a temperature of about 104° F. (generally by the incubation upon them of the mother).¹

Such are some of the features common to all the existing species of birds.² Many others might be enumerated, but only those are given which contrast with the characteristics of the mammals on the one hand and those of the reptiles on the other. The inferior vertebrates are distinguished by so many salient characters and are so widely separated from the higher that they need not be compared with the present class.

Although birds are of course readily recognizable by the observer, and are definable at once, existing under present conditions, as warm-blooded vertebrates, with the anterior members primitively adapted for flight, — they are sometimes abortive, — and covered with feathers, such characteristics do not suffice to enable us to appreciate the relations of the class. The characteristics have been given more fully in order to permit a comparison between the members of the class and those of the mammals and reptiles. The class is without exception the most homogeneous in the animal kingdom; and among the living forms less differences are observable than between the representatives of many natural orders among other classes. But still the differences between them and the other existing forms are sufficient, perhaps, to authorize the distinction of the group as a class, and such rank has always been allowed excepting by one recent naturalist.

But if we further compare the characters of the class, it becomes evident that those shared in common with the reptiles are much more numerous than those shared with the mammals. In this respect the views of naturalists have changed within recent years. Formerly the two characteristics shared with the mammals — the quadrilocular heart and warm blood — were deemed evidences of the close affinity of the two groups, and they were consequently combined as a section of the vertebrates, under the name of Warm-blooded Vertebrates. But recently the tendency has been, and very justly, to consider the birds and reptiles as members of a common group, separated on the one hand from the mammals and on the other from the batrachians; and to this combination of birds and reptiles has been given the name *Sauropsida*.

¹ Dr. Cones, in his "Key to North American Birds," gives an able and extended article on the general characteristics of birds, and on their internal and external anatomy, to which we refer our readers. A paper by Professor E. S. Morse in the "Annals of the New York Lyceum of Natural History" (X, 1869), "On the Carpus and Tarsus of Birds," is of much scientific value.

² Carus and Gerstaecker (Handbuch der Zoologie, 1868, 191) present the following definition of birds as a class: —

Aves. Skin covered wholly or in part with feathers. Anterior pair of limbs, converted into wings, generally used in flight; sometimes rudimentary. Occiput with a single condyle. Jaws encased in horny sheaths, which form a bill; lower jaw of several elements and articulated behind with a distinct quadrate bone attached to the skull. Heart with double auricle and double ventricle. Air-spaces connected to a greater or less extent with the lungs; the skeleton more or less pneumatic. Diaphragm incomplete. Pelvis generally open. Reproduction by eggs, fertilized within the body, and hatched externally, either by incubation or by solar heat; the shells calcareous and hard.

As already indicated, the range of variation within this class is extremely limited; and if our views respecting the taxonomic value of the subdivisions are influenced by this condition of things, we are obliged to deny to the groups of living birds the right which has generally been conceded of ranking as orders.

The greatest distinctions existing among the living members of the class are exhibited on the one hand by the Ostriches and Kiwis and the related forms, and on the other by all the remaining birds.

These contrasted groups have been regarded by Professor Huxley as of ordinal value; but the differences are so slight, in comparison with those which have received ordinal distinction in other classes, that the expediency of giving them that value is extremely doubtful; and they can be combined into one order, which may appropriately bear the name of *Eurhipidura*.

An objection has been urged to this depreciation of the value of the subdivisions of the class, on the ground that the peculiar adaptation for flight, which is the prominent characteristic of birds, is incapable of being combined with a wider range of form. This is, at most, an explanation of the cause of the slight range of variation, and should not therefore affect the exposition of the *fact* (thereby admitted) in a classification based on morphological characteristics. But it must also be borne in mind that flight is by no means incompatible with extreme modifications, not only of the organs of flight, but of other parts, as is well exemplified in the case of bats and the extinct pterodactyls.

Nor is the class of birds as now limited confined to the single order of which only we have living representatives. In fossil forms we have, if the differences assumed be confirmed, types of two distinct orders, one being represented by the genus *Archæopteryx* and another by the genera *Ichthyornis* and *Apatornis* of Marsh. The first has been named *Saurura* by Hæckel; the second *Ichthyornithides* by Marsh.

Compelled thus to question the existence of any groups of ordinal value among recent birds, we proceed now to examine the grounds upon which natural subdivisions should be based. The prominent features in the classification of the class until recently have been the divisions into groups distinguished by their adaptation for different modes of life; that is, whether aerial or for progression on land, for wading or for swimming; or, again, into Land and Water Birds. Such groups have a certain value as simply artificial combinations, but we must not be considered as thereby committing ourselves to such a system as a natural one.

The time has scarcely arrived to justify any system of classification hitherto proposed, and we can only have a sure foundation after an exhaustive study of the osteology, as well as the neurology and splanchnology, of the various members. Enough, however, has already been done to convince us that the subdivision of the class into Land and Water Birds does not express

the true relations of the members embraced under those heads. Enough has also been adduced to enable us to group many forms into families and somewhat more comprehensive groups, definable by osteological and other characters. Such are the Charadriomorphæ, Cecomorphæ, Alectoromorphæ, Pterocloromorphæ, Peristeromorphæ, Coracomorphæ, Cypselomorphæ, Celeomorphæ, Aëtomorphæ, and several others. But it is very doubtful whether the true clew to the affinities of the groups thus determined has been found in the relations of the vomer and contiguous bones. The families, too, have been probably, in a number of cases, especially for the passerine birds, too much circumscribed. The progress of systematic ornithology, however, has been so rapid within the last few years, that we may be allowed to hope that in a second edition of this work the means may be furnished for a strictly scientific classification and sequence of the families. (T. N. G.)

A primary division of recent birds may be made by separation of the (a) *Ratitæ*, or struthious birds and their allies, — in which the sternum has no keel, is developed from lateral paired centres of ossification, and in which there are numerous other structural peculiarities of high taxonomic import, — from the (b) *Carinatæ*, including all remaining birds of the present geologic epoch. Other primary divisions, such as that into *Altrices* and *Præcoces* of Bonaparte, or the corresponding yet somewhat modified and improved *Psilopædes* and *Ptilopædes* of Sundevall, are open to the serious objections that they ignore the profound distinctions between struthious and other birds, require too numerous exceptions, cannot be primarily determined by examination of adult specimens, and are based upon physiological considerations not necessarily co-ordinate with actual physical structure.

In the following scheme, without attempting to indicate positive taxonomic rank, and without committing myself finally, I present a number of higher groups into which Carinate birds may be divided, capable of approximately exact definition, and apparently of approximately equivalent taxonomic value. Points of the arrangement are freely drawn from the writings of various authors, as will be perceived by those competent to judge without special references. I am particularly indebted, however, to the late admirable and highly important work of Professor Sundevall,¹ from which very many characters are directly borrowed. The arrangement, in effect, is a modification of that adopted by me in the "Key to North American Birds," upon considerations similar to those herewith implied. The main points of difference are non-recognition of three leading groups of aerial, terrestrial, and natatorial birds, — groups without morphological basis, resting simply upon teleological modification; a general depreciation of the taxonomic value of the several groups, conformably with the considerations presented in the preceding pages of this work; abolishing of the group *Grullatores*; and recognition of a primary group *Sphenisci*.²

¹ *Methodi naturalis avium disponendarum tentamen*. Stockholm, 1872-73.

² This group is insusceptible of definition. The wading birds, as usually allocated, do not

A. PASSERES.¹ Hallux invariably present, completely incumbent, separately movable by specialization of the *flexor hallucis longus*, with enlarged base and its claw larger than that of the middle digit. Neither second nor fourth toe versatile; joints of toes always 2, 3, 4, 5, from first to fourth. Wing-coverts comparatively short and few; with the exception of the least coverts upon the *plica alaris*, arranged in only two series, the greater of which does not reach beyond the middle of the secondary remiges.² Rectrices twelve (with rare anomalous exceptions). Musical apparatus present in greater or less development and complexity. Palate ægithognathous. Sternum of one particular mould, single-notched. Carotid single (sinistra). Nature highly altricial and psilopædic.

a. Oscines.³ Sides of the tarsus covered in most or all of their extent with two undivided horny plates meeting behind in a sharp ridge (except in *Alaudidæ*; one of the plates imperfectly divided in a few other forms). Musical apparatus highly developed, consisting of several distinct pairs of syringeal muscles. Primaries nine only, or ten with the first frequently spurious, rarely over two thirds the length of the longest, never equalling the longest.

b. Clamatores.⁴ Sides of the tarsus covered with divided plates or scales variously arranged, its hinder edge blunt. Musical apparatus weak and imperfect, of few or incompletely distinguished syringeal muscles (as far as known). Primaries ten with rare exceptions, the first usually equalling or exceeding the rest.

B. PICARIÆ.⁵ Hallux inconsiderable, weak or wanting, not always incumbent, not separately movable by distinction of a special muscle, its claw not longer than that of the middle toe unless of exceptional shape (e. g. *Centropus*). Second or fourth toe frequently versatile; third and fourth frequently with decreased number of joints. Wing-coverts for the most part larger and in more numerous series than in *Passeres*, the greater series reaching beyond the middle of the secondary quills (except in many *Pici* and some others). Rectrices commonly ten (eight to twelve). Primaries always ten, the first only exceptionally short (as in *Pici*). Musical apparatus wanting, or consisting of a muscular mass, or of not more than three pairs of syringeal muscles. Palate desmognathous or ægithognathous. Sternum of non-passerine character, its posterior border entire or doubly notched or fenestrate. Carotid single or double. Nature completely altricial, but young sometimes hatched with down⁶ (e. g. *Caprimulgidæ*).

possess in common one single character not also to be found in other groups, nor is the collocation of their characters peculiar.

¹ Corresponding closely with the Linnæan and earlier Sundevallian acceptation of the term. Equivalent to the later *Oscines* of Sundevall.

² As remarked by Sundevall, exceptions to the diagnostic pertinence of these two characters of hind claw and wing-coverts taken together are scarcely found. For, in those non-passerine birds, as *Raptores* and some *Herodiones*, in which the claw is enlarged, the wing-coverts are otherwise disposed; and similarly when, as in many *Pici* and elsewhere, the coverts are of a passerine character, the feet are highly diverse.

³ *Laminiplantares* of Sundevall plus *Alaudidæ*.

⁴ *Scutelliplantares* of Sundevall minus *Alaudidæ*.

⁵ Nearly equivalent to the Linnæan *Picæ*. Equal to the late (1873) *Volucres* of Sundevall.

⁶ A polymorphic group, perfectly distinguished from *Passeres* by the above characters in which, for the most part, it approximates to one or another of the following lower groups, from which, severally, it is distinguished by the inapplicability of the characters noted beyond. My divisions

a. **Cypseli.** Palate ægithognathous. Wings lengthened in their terminal portions, abbreviated basally, with the first primary not reduced. Tail of ten rectrices. Bill fissirostral or tenuirostral. Feet never zygodactyle nor syndactyle, small, weak, scarcely fitted for locomotion: hallux often elevated or lateral or reversed: front toes usually webbed at base, or with abnormal ratio of phalanges in length and number, or both. Sternum deep-keeled, usually entire or else doubly notched or perforate. Syringeal muscles not more than one pair.

b. **Cuculi.** Palate desmognathous. Wings not peculiar in brevity of proximal or length of distal portions, and with first primary not reduced. Tail of eight to twelve rectrices. Bill of indeterminate form, never cered; tongue not extensile. Feet variously modified by versatility or reversion of either first, second, or fourth toes, or by cohesion for a great distance of third and fourth, or by absence or rudimentary condition of first or second; often highly scansorial, rarely ambulatorial. Syringeal muscles two pairs at most.

c. **Pici.** Palate "exhibiting a simplification and degradation of the ægithognathous structure" (Huxley): wings bearing out this passerine affinity in the common reduction of the first primary and the restriction of the greater coverts. Tail of ten perfect rectrices and usually a supplementary pair. Rostrum hard, straight, narrow, subequal to head, with commonly extensile and vermiform but not fureate tongue. Feet highly scansorial. Fourth toe permanently reversed: basal phalanges of toes abbreviated. Sternum doubly notched. Salivary glands highly developed. Hyoidean apparatus peculiar.

C. PSITTACI. Bill enormously thick, short, high, much arched from the base, the upper mandible strongly hooked at the end, cered at base, and freely movable by complete articulation with the forehead, the under mandible with short, broad, truncate symphysis. Feet permanently zygodactyle by reversion of the fourth toe, which articulates by a double facet. Tarsi reticulate. Syrinx peculiarly constructed of three pairs of intrinsic muscles. Tongue short, thick, fleshy. Sternum entire or fenestrate. Clavicles weak, defective, or wanting. Orbit more or less completed by approach or union of postorbital process and lachrymal. Altricial; psilopædic.

D. RAPTORES. Bill usually powerful, adapted for tearing flesh, strongly decurved and hooked at the end, furnished with a cere in which the nostrils open. Feet strongly flexible, with large, sharp, much curved claws gradually narrowed from base to tip, convex on the sides, that of the second toe larger than that of the fourth toe, and the hinder not smaller than the second one. Feet never permanently zygodactyle, though fourth toe often versatile: anterior toes commonly with one basal web: hallux considerable and completely incumbent (except *Cathartidæ*). Legs feathered to the suffrago or beyond. Rectrices twelve (with rare exceptions): primaries sinuate or emarginate (with rare exceptions). Sternum singly or doubly notched or fenestrate. Palate desmognathous. Carotids double. Syrinx wanting or developed with only one pair of muscles. Altricial; the young being weak and helpless, yet psilopædic, being downy at birth.

E. COLUMBÆ. Bill straight, compressed, horny at the vaulted tip, which is separated by a constriction from the soft membranous basal portion. Nos-

of *Picariæ* correspond respectively to the *Cypselomorphæ*, *Coccygomorphæ*, and *Celeomorphæ* of Huxley, from whom many of the characters are borrowed.

trils beneath a soft, tumid valve. Tomia of the mandibles mutually apposed. Frontal feathers sweeping in strongly convex outline across base of upper mandible. Legs feathered to the tarsus or beyond. Hallux incumbent (with few exceptions), and front toes rarely webbed at base. Tarsus with small scutella in front, or oftener reticulate, the envelope rather membranous than corneous. Head very small. Plumage without after-shafts. One pair of syringeal muscles. Sternum doubly notched, or notched and fenestrate on each side. Carotids double. Palate schizognathous. Monogamous, and highly altricial and psilopædic.

F. GALLINÆ. Bill generally short, stout, convex, with an obtuse vaulted tip, corneous except in the nasal fossa, and without constriction in its continuity. Nostrils scaled or feathered. Tomia of upper mandible overlapping. Frontal feathers forming re-entrant outline at the base of upper mandible. Legs usually feathered to the tarsus or beyond. Hallux elevated, with few exceptions (e. g. *Craciidæ* and *Megapodidæ*), smaller than the anterior toes, occasionally wanting (as in the Hemipods). Tarsus, when not feathered, generally broadly scutellate. Front toes commonly webbed at base. Claws blunt, little curved. Wings strong, short, and concavo-convex. Rectrices commonly more than twelve. Head small. Plumage usually after-shafted. Carotids double (except *Turnicidæ* and *Megapodidæ*). No intrinsic syringeal muscles. Sternum very deeply, generally doubly, notched. Palate schizognathous. Chiefly polygamous. Præcocial and ptilopædic.

G. LIMICOLÆ. Tibiæ bare of feathers for a variable (sometimes very slight) distance above the suffrago. Legs commonly lengthened, sometimes excessively so, and neck usually produced in corresponding ratio. Tarsi scutellate or reticulate. Toes never coherent at base; cleft, or united for a short distance by one or two small movable basal webs (palmate only in *Recurvirostra*, lobate only in *Phalaropodidæ*). Hallux always reduced, obviously elevated and free, or wanting; giving a foot of cursorial character. Wings, with few exceptions, lengthened, pointed, and flat; the inner primaries and outer secondaries very short, forming a strong re-entrance on the posterior border of the wing. Tail shorter than the wing, of simple form, and of few feathers, except in certain Snipes. Head globose, sloping rapidly down to the contracted base of the bill, completely feathered (except *Philomachus* ♂). Gape of bill short and constricted; tip usually obtuse; bill weak and flexible. Rostrum commonly lengthened, and more or less terete and slender; membranous wholly or in great part, without hard cutting edges. Nostrils narrow, placed low down, entirely surrounded with soft skin; nasal fosse extensive. Palate schizognathous. Sternum usually doubly, sometimes singly, notched. Carotids double. Pterylosis of a particular pattern. Nature præcocial and ptilopædic. Comprising the "Plover-Snipe" group; species of medium and small size, with never extremely compressed or depressed body; more or less aquatic, living on plains and in open places, usually near water, nesting on the ground, where the young run freely at birth.

H. HERODIONES. Tibiæ naked below. Legs and neck much lengthened in corresponding ratio. Toes long, slender, never coherent at base, where cleft, or with movable basal webbing. Hallux (as compared with that of the preceding and following group) lengthened, free, and either perfectly incumbent or but little elevated, with a large claw, giving a foot of insessorial character. Wings commonly obtuse, but broad and ample, without marked re-entrance on posterior border, the intermediate remiges not

being much abbreviated. Tail short and few-feathered. Head narrow, conico-elongated, gradually contracting to the large, stout base of the bill; the loral and orbital region, or the whole head, naked. Gape of the bill deeply fissured; tip usually acute; tomia hard and cutting. Bill conico-elongate, always longer than the head, stout and firm. Nostrils small, placed high up, with entirely bony and horny, or only slightly membranous, surroundings. Pterylosis nearly peculiar in the presence, almost throughout the group, of powder-down tracts, rarely found elsewhere; pteryllæ very narrow. Palate desmognathous. Carotids double. Altricial. Comprising the Herons, Storks, Ibises, etc. (not Cranes). Species usually of large stature, with compressed body and very long S-bent neck; perching and nesting usually in trees, bushes, or other high places near water; young hatching weak, scarcely feathered, and reared in the nest.

I. ALECTORIDES.¹ Tibiæ naked below. Neck, legs, and feet much as in the last group, but hallux reduced and obviously elevated, with small claw, the resulting foot cursorial (natatorial and lobate in *Fulica*). Wings and tail commonly as in *Herodiones*. Head less narrowed and conic than in the last, fully feathered or with extensive baldness (not with definite nakedness of loral and orbital regions). Bill of various shape, usually lengthened and obtuse, never extensively membranous. Rictus moderate. Nostrils lower than in *Herodiones*. Pterylosis not peculiar. Palate schizognathous. Carotids double. Nature præcocial and ptilopædic. Comprising the Cranes and Rails and their allies; the former agreeing with the *Herodiones* superficially in stature, etc., but highly diverse in the schizognathous palate, præcocial nature, etc.

J. LAMELLIROSTRES. Feet palmate; tibiæ feathered (except *Phænicopterus*). Legs near centre of equilibrium of the body, its axis horizontal in walking; not lengthened except in *Phænicopterus*. Knee-joint rarely exerted beyond general skin of the body. Wings moderate, reaching when folded to, but not beyond, the usually short and rounded (exceptionally long and cuneate) tail. Feet tetradactyle (except sometimes in *Phænicopterus*); hallux reduced, elevated and free, often independently lobate. Bill lamellate, i. e., furnished along each commissural edge with a regular series of mutually adapted laminae or tooth-like processes, with which correspond certain lacinate processes of the fleshy tongue, which ends in a horny tip. Bill large, thick, high at base, depressed towards the end, membranous to the broad obtuse tip, which is occupied by a horny "nail" of various shape. Nostrils patent, never tubular; nasal fossæ slight. No gular pouch. Plumage dense, to resist water. Eyes very small. Head high, compressed, with lengthened, sloping frontal region. Palate desmognathous. Reproduction præcocial; young ptilopædic. Eggs numerous. Carotids double. Sternum single-notched. Comprising Flamingoes and all the Anserine birds.

K. STEGANOPODES. Feet totipalmate; hallux lengthened, nearly incumbent, semilateral, completely united with the second toe by a full web. Tibiæ feathered; position of legs with reference to axis of body variable, but generally far posterior; knee-joint not free. Wings and tail variable. Bill of very variable shape, never lamellate, wholly corneous; its tomia often serrate; external nares very small or finally abortive. A prominent naked gular pouch. Tarsi reticulate. Sternum entire or nearly so; furcu-

¹ Groups G., H., and I. are respectively equal to the *Charadriomorphæ*, *Pelargomorphæ*, and *Geranomorphæ* of Huxley.

lum confluent with its keel. Carotids double. Palate highly desmognathous. Reproduction altricial; young psilopædic or ptilopædic. Eggs three or fewer.

L. LONGIPENNES. (To most of the characters of the group here given the genus *Halodroma* is a signal exception, though unquestionably belonging here.) Feet palmate. Tibiæ feathered. Legs at or near centre of equilibrium, affording horizontal position of axis of body in walking. Knee scarcely buried in common integument; tibia sometimes with a long apophysis. Hallux elevated, free, functionless: very small, rudimentary, or wanting. Rostrum of variable shape, usually compressed and straight to the hooked end, sometimes entirely straight and acute, commonly lengthened, always corneous, without serration or true lamellæ. Nostrils of various forms, tubular or simply fissured, never abortive. No gular pouch. Wings very long and pointed, surpassing the base and often the end of the large, well-formed, few-feathered tail. Carotids double. Palate schizognathous. Reproduction altricial; young ptilopædic. Eggs three or fewer. Habit highly volucral.

M. PYGOPODES. Feet palmate or lobate. Tibiæ feathered, often with a long apophysis, always buried in common integument nearly to the heel-joint, necessitating a more or less erect posture of the body on land, where progression is difficult. Hallux small, elevated or wanting; feet lobate or palmate. Bill of indeterminate shape, wholly corneous, never lamellate or serrate, nor with gular pouch. Nostrils not abortive. Wings very short, reaching scarcely or not to the base, never to the tip, of the short, sometimes rudimentary, tail. Palate schizognathous. Carotid usually double, sometimes single (in *Podiceps* and *Mergulus*). Nature altricial or præcocial; young ptilopædic. Highly natatorial.

N. SPHENISCI. With general characters of the last group, but distinguished by unique ptilosis and wing-structure, etc. Plumage without apteria, of singularly modified scale-like feathers on most parts; no developed remiges. Wings unfit for flight, insusceptible of perfect flexion or extension, very short, with peculiarly flattened bones and stable articulations. Skeleton non-pneumatic. Many bones, terete in ordinary birds, here flattened. Metatarsal bone flattened transversely, doubly fenestrated. Hallux elevated, lateral, minute, free. No free pollex. Two anconal sesamoids; patella from double centres; tibia without apophysis; a free tarsal ossicle. Sternum with long lateral apophyses. Pelvic connections unstable. Carotids double. Comprising only the Penguins. Confined to the Southern Hemisphere.

Having thus presented and defined an arrangement of the higher groups into which recent Carinate birds are susceptible of division, I next proceed to the consideration of the North American Families of birds which the authors of the present work have provisionally adopted as suitable to the end they had in view. Professor Baird urges the caution that the scheme is intended merely for the convenient determination of the North American species, aware that in many instances diagnoses or antitheses of entire pertinence in such application would fail or be negatived by consideration of the exotic forms. The arrangement of the families here adopted is essentially that presented in 1858 in Professor Baird's "Birds of

North America," modified somewhat in accordance with more recent views of Professor Sundevall and others. But before proceeding to the analysis of the families, I will introduce an artificial clew to the preceding higher groups as adopted, so far as they are represented by North American species.

ARTIFICIAL KEY TO THE FOREGOING HIGHER GROUPS,

By means of which any North American bird may be readily referred to that group to which it is held to belong.

- I. Toes 3; 2 in front, 1 behind. (Pici) PICARLÆ.
- II. Toes 3; all in front. Toes cleft or semipalmate. LIMICOLÆ.
Toes palmate. Nostrils tubular LONGIPENNES.
Nostrils not tubular PYGOPODES.
- III. Toes 4; 2 in front, 2 behind. Bill cered and hooked PSITTACI.
Bill neither cered nor hooked. (Cuculi or Pici) PICARLÆ.
- IV. Toes 4; 3 in front, 1 behind.
 1. Toes syndactyle (Cuculi) PICARLÆ.
 2. Toes totipalmate (all four full-webbed) STEGANOPODES.
 3. Toes palmate. Bill curved up LIMICOLÆ.
Bill not curved up; lamellate LAMELLIROSTRES.
not lamellate; hallux lobate PYGOPODES.
hallux not lobate LONGIPENNES.
 4. Toes lobate. Tail rudimentary PYGOPODES.
Tail perfect. A horny frontal shield ALECTORIDES.
No horny frontal shield LIMICOLÆ.
 5. Toes semipalmate; joined by evident movable basal web (A).
 6. Toes cleft to the base, or there immovably coherent (B).
- A. Hind toe elevated above the level of the rest.
 - Tibiae naked below. Nostrils perforate ALECTORIDES.
Nostrils imperforate. Tarsi reticulate. Head bald HERODIONES.
Head feathered LIMICOLÆ.
Tarsi scutellate in front LIMICOLÆ.
 - Tibiae feathered below. Nostrils perforate RAPTORES.
Nostrils imperforate. Gape reaching below eye. (Cypseli) PICARLÆ.
Gape not reaching below eye GALLINÆ.
- AA. Hind toe inserted on the level of the rest.
 - Tibiae naked below HERODIONES.
 - Tibiae feathered below. Bill cered and hooked RAPTORES.
Bill not cered. Nasal membrane soft and tumid COLUMBÆ.
Nasal scale hard and flat GALLINÆ.
- B. Hind toe elevated above the level of the rest.
 - Gape reaching below eye (Cypseli) PICARLÆ.
 - Gape not below eye. First primary emarginate or about equal to 2d LIMICOLÆ.
First primary not emarginate and much shorter than 2d, ALECTORIDES.
- BB. Hind toe inserted on the level of the rest.
 - Nostrils opening beneath soft swollen membrane COLUMBÆ.
 - Nostrils otherwise. Bill cered and hooked RAPTORES.
Bill otherwise. Secondaries only six (Cypseli) PICARLÆ.
Secondaries more than six (a) PASSERES.
 - (a) Primaries 10; the 1st more than $\frac{2}{3}$ as long as the longest. (Clamatores) PASSERES.
Primaries 10; the 1st not $\frac{2}{3}$ as long as the longest. } (Oscines) PASSERES.
Primaries 9.

Recurring now to consideration of the North American *Families* of the foregoing higher groups, I take up the latter in the natural order in which they have been presented, giving under head of each such group an analysis of the North American families by which it is represented, reiterating the caution that the characters are drawn up only with reference to the North American genera, and are, consequently, not necessarily or always applicable upon wider considerations. These analyses are made as nearly natural as the state of the case permits, but I seize upon any obvious external characters which may be afforded, without regard to their morphological significance or taxonomic value.

ANALYSIS OF THE FAMILIES OF **PASSERES**.

A. Oscines. Musical apparatus highly developed. Back of tarsus undivided, or formed of a few scutella distinct from those lapping over the front. First primary wanting, spurious, or at most not over two thirds the length of the longest.

a. Each side of tarsus covered with a plate undivided in most or all of its length, and meeting its fellow in a sharp ridge behind.

b. Primaries only nine.

c. Bill triangular, depressed, about as wide at base as long; the gape twice as long as the culmen, reaching to about opposite the eyes; tomia straight or gently curved. No obvious rictal bristles. Tarsi not longer than the lateral toe and claw. Wings long and pointed, the first primary equal to or longer than the second. Central tail-feathers not half as long as the wing *Hirundinidæ*.

cc. Bill variously conico-elongate or slender, or, if depressed, with long rictal bristles; gape not nearly twice as long as culmen; tomia straight or gently curved. Nostrils not obviously nearer culmen than tomia. Tarsus longer than lateral toe and claw.

Bill very slender, acute; culmen rather concave at base. Longest secondary acuminate, nearly or quite equal to the primaries in the closed wing. Hind claw little curved, about twice as long as the middle claw. Hind toe and claw longer than middle toe and claw *Motacillidæ*.

Bill variously conico-elongate and acute; culmen not concave at base. Longest secondary not acuminate, falling far short of primaries in the closed wing. Hind claw well curved, not nearly twice as long as middle claw; hind toe and claw not longer than middle toe and claw. Gape ample; tongue slightly bifid or brushy, if at all *Sylviolidæ*.

Bill lengthened, very acute, even decurved. Wings and feet as in the last. Gape constricted; tongue generally deeply bifid or brushy *Certhidæ*.

ccc. Bill more or less truly conic, usually short, thick; commissure usually more or less evidently abruptly angulated near the base, or with lobe or tooth further forward. Nostrils obviously nearer culmen than tomia. Tarsus longer than lateral toe and claw.¹

¹ In the true conirostral or fringilliform genera the under mandible has high strong tomia, bent at an angle near the base; the corresponding portion of the upper mandible is deep, so that the

Bill stout, tumid, convex in nearly all its outlines; tomia not angulated, but with one or more lobes or nicks in advance of the base. Nostrils placed very high. Other characters much as in *Sylvicolidae*. Colors chiefly red and yellow. One genus of *Tanagridæ*.

Bill truly conic, much shorter than head, usually with the angulation evident; no lobe along middle of tomia, but usually a notch at end. Nostrils placed very high. Rictal bristles usually obvious *Fringillidæ*.

Bill conic, but lengthened, little if any shorter than head; the angulation of the tomia evident; no notch at end. Nostrils high.

No rictal bristles *Icteridæ*.

bb. Primaries ten.

Otherwise with characters much as in *Icteridæ* *Sturnidæ*.

d. Nostrils concealed with antrorse bristly feathers (except in *Psilorhinus* and *Gymnokitta*).¹

Base of bill sheathed with antrorse bristly feathers, having lateral branches to their very ends; its tip mostly notched. Basal joint of middle toe united only half-way to the lateral. Sides of tarsus occupied by a lateral groove, mostly filled in with small plates. First primary more than half as long as second. Large, — over seven inches *Corvidæ*.

Base of bill with two tufts of bristly feathers, ending in simple filaments without lateral branches. its tip mostly unnotched. Basal joint of middle toe united nearly all its length with the lateral. Sides of tarsus ungrooved. First primary less than half as long as second. Small, — under seven inches. *Paridæ*.²

dd. Nostrils exposed.

e. Tail scansorial, with rigid acute feathers. Whole bill slender, compressed, acute, decurved, unnotched, unbristled. Outer toe much longer than inner *Certhiidæ*.

ee. Tail not scansorial, graduated. First primary not less (generally more) than half as long as the second, and inner toe united to the middle by at least one half (usually more) of the length of its basal joint.

Tarsus with few obscure scutella. Rictal bristles present. Bill stout, but not toothed nor hooked. Wing excessively rounded (fifth, sixth, and seventh primaries longest), much shorter than the long graduated tail. Size small. Plumage brown, unbanded *Chamæadæ*.

Tarsus distinctly scutellate. Nostrils wholly exposed,

nostrils are nearer the culmen than the tomia. The whole bill is more or less bent in its axis from the axis of the cranial base, so that the palate curves down, or is excavated or, as it were, is broken into two planes meeting at an angle, — one plane the anterior hard imperforate roof of the mouth, the other the back palate where the internal nares are situate (Sundevall). The single North American genus of *Tanagridæ* (*Pyrranga*) is here conventionally ranged on account of its high nostrils and conic bill, although it does not show angulation of the tomia. The *Icteridæ*, with obviously angulated tomia, shade into the *Fringillidæ* in shortness and thickness of bill, and into other families in its length and slenderness.

¹ These two genera, *Psilorhinus* and *Gymnokitta*, of the family *Corvidæ*, have naked nostrils, as under *dd*, but otherwise show the characters of *Corvidæ*.

² With the *Paridæ* the authors of this work include the Nuthatches as a subfamily *Sittinæ*, which I prefer to dissociate and place as a group of equal grade next to *Certhiidæ*.

sealed. No rictal bristles, but loreal feathers with bristly points. Bill slender, not notched nor hooked. Wings and tail moderately rounded; neither very much shorter than the other. Size small. Color brown, etc., the wings and tail barred or undulated *Troglodytidae*.

Tarsus distinctly scutellate. Nostrils overhung (not concealed) with bristly feathers. Rictal bristles present, strong. Bill powerful, compressed, strongly notched, toothed, and hooked. Wings and tail moderate. Large.

Colors black, white, and gray *Laniidae*.

eee. Tail not scansorial. First primary less than half as long as the second,¹ or about half as long, in which case the inner toe is cleft nearly to its base (*f*' and *f*'').

f. Basal joint of middle toe united some distance with the inner, and for half or more of its length with the outer toe.

Basal joint of middle toe shorter than that of inner toe, and wholly adherent to both inner and outer toes. Tarsus longer than middle toe and claw. Gonys more than half the length of the lower jaw. Bill stout, high, compressed; notched and abruptly hooked at tip . . . *Vireonidae*.

Basal joint of middle toe not shorter than that of inner toe; united to the outer for about two thirds, to the inner for about one half, its length. Tarsus not longer than the middle toe and claw. Gonys less than half the length of the under jaw. Bill triangular, much depressed at base, moderately notched, and hooked at tip² *Ampelidae*.

Basal joint of middle toe shorter than that of the inner toe, united to the outer for about two thirds, to the inner for about one half, its length. Tarsus longer than middle toe and claw. Gonys more than half the length of the under jaw. Bill very weak and slender, little decurved or notched at tip. Very small, — under six inches long. (Tarsi booted in *Regulus*, distinctly scutellate in *Poliophtila*.) *Sylviidae*

ff. Basal joint of middle toe quite free from the inner, and not united with the outer more than half-way.

Nostrils linear, low. No bristles or bristly points whatever about the mouth. Wings short, rounded, concavo-convex. Tail very short, nearly concealed by its coverts. Tarsi booted *Cinclidae*.

Nostrils oval. Bristles or bristly points about the mouth. Wings very long and pointed, reaching, when folded, beyond the middle of the short, square, or emarginate tail, and one and a half times or more

¹ In the genus *Ampelis* and part of the *Vireonidae* it is so extremely short as to appear absent, and is displaced, lying concealed outside the second (apparently first) primary, like one of the primary coverts; however, it may always be detected on close examination, differing from the coverts with which it is associated in some points of size and shape, if not also of color.

² In *Ampelis* there is tendency to subdivision of the lateral plates; in *Myiadestes* the anterior scutella are obsolete.

the length of the latter; tip formed by second, third, and fourth quills; outer secondary reaching only about two thirds way to end of longest primary; spurious quill very short. Tarsi booted . . . *Saxicolidae*.

Nostrils oval. Bristles or bristly points about the mouth. Wings moderate, not reaching, when folded, beyond the middle of the tail, and not over one and a third times as long as the latter; tip formed by third to sixth quill; outer secondary reaching in closed wing three fourths or more the length of the longest primary. Spurious quill longer, sometimes one half the second. Tarsi scutellate in *Mimidae*, booted in *Turdidae* *Turdidae*.

aa. Outside of tarsus covered with two series of scutella, — one lapping entirely around in front, the other entirely around behind, and meeting at a groove on the inside; hind edge blunt. First primary spurious or apparently wanting. Hind claw much lengthened, scarcely curved. Nostrils with antrorse bristly feathers. Bill conico-elongate *Alaudidae*.

B. Clamatores. Outside of tarsus covered with a series of plates variously arranged, lapping entirely around in front and behind, to meet at a groove on the inner side.

First primary lengthened, often longest, at least over two thirds as long as the longest. Bill broad at the base, much depressed, tapering to a fine point, which is abruptly decurved; culmen rounded or flattened; gonys flattened; commissure straight, or nearly so, to the tip. Nostrils small, circular, basal; overhung, but not concealed by bristles. Mouth capacious, with broad and deeply fissured rictus, beset with numerous long strong bristles. Feet small, weak. Tail of twelve feathers *Tyrannidae*.

ANALYSIS OF THE FAMILIES OF PICARIÆ.

Secondaries only six.

Bill tenuirostral, longer than head, nearly cylindrical. Gape constricted. Tongue filiform, extensile, bi-tubular. Wings long in terminal portion, abbreviated proximally, acute. Plumage compact, of metallic sheen. Size smallest of all birds. (Humming-Birds.) *Trochilidae*.

Secondaries more than six.

Feet syndactyle by connation of outer and middle toes.

Outer toe much longer than the inner, united for half its length with the middle, forming a broad sole. Tibiæ naked below. Bill longer than head, straight, acute, with hard cutting edges and ample rictus. Tongue rudimentary, fixed. Wings pointed, much longer than the short square tail. Tail-feathers twelve. Plumage compact, oily. (Kingfishers.) *Alcedinidae*.

Feet zygodactyle¹ by reversion of outer or fourth toe.

Not scansorial; tail of eight or ten long soft feathers. Bill with decurved tip, not fitted for hammering; rictus ample. Tongue not extensile nor vermiform nor barbed. Salivary glands and hyoidean apparatus not peculiar. No nasal tufts of feathers. Arboreal and terrestrial. (Cuckoos.) *Cuculidae*.

¹ Excepting *Picoides*, in which the true hind toe (hallux) is wanting; the outer or fourth toe being, however, reversed as usual, and taking the place of the hind toe.

Highly scansorial; tail of twelve rigid acuminate feathers, whereof the outer pair are short and spurious, concealed between bases of next two pairs. Bill stout, straight, with the tip truncate or acute, not decurved, — an efficient chisel for hammering and boring wood. Tongue vermiform, extensile,¹ and barbed. Salivary glands large; hyoidean apparatus peculiar. Nasal tufts usually present. Arboreal. (Woodpeckers.) . *Picidae*.
Feet neither syndactyle nor zygodactyle.

Feet semipalmate, of normal ratio of phalanges. Anterior toes connected at base by movable webbing. Hind toe very small, elevated, semilateral. Middle toe produced, its large claw pectinate. Bill fissirostral, with very small, triangular, depressed horny part and immense rictus, reaching below the eyes, furnished with bristles. Rather large. Plumage soft and lax, much variegated *Caprimulgidae*.

Feet scarcely or not semipalmate, of frequently abnormal ratio of phalanges (middle or outer toe, or both, with fewer joints than usual among birds). Hallux very small, elevated, frequently lateral or versatile. Middle toe not produced nor its claw pectinate. Bill much as in the last, but rictus unbristled. Small. Plumage compact, of few simple subdued colors *Cypselidae*.

FAMILY OF **PSITTACI**.

To characters of *Psittaci* add: Cere feathered, concealing the nostrils. Feet granular, rugose. Wings pointed. Tail cuneate. Plumage coarse and dry. Head feathered. Colors green, with yellow and blue *Psittacidae*.²

ANALYSIS OF FAMILIES OF **RAPTORES**.

Feet highly raptorial, with large, strong, sharp, curved, contractile claws, adapted for grasping. Hallux perfectly incumbent, lengthened (more than half as long as the fourth toe), with large claw. Front toes with slight basal webbing between outer or middle ones, or none; outer toe often reversible. Nostrils imperforate. Bill short, stout, not notably contracted in its continuity, with strongly hooked tip; tomia often once-twice toothed or lobed. Head feathered wholly or in greatest part. Lower larynx developed with one pair of muscles. Plumage with or without after-shafts. Cæca present, as a rule, if not always.

Physiognomy peculiar by reason of great lateral expansion and lengthwise shortening of the cranium, causing the eyes to be directed forward. Eyes surrounded by a disc of radiating bristly feathers, in front closely appressed to and hiding the base of the bill, elsewhere bounded by a rim of differently formed feathers. Tomia never toothed or lobed. Nostrils usually at the edge of the cere. Outer toe completely versatile, shorter than the inner toe. Basal phalanx of middle toe not longer than the second, and much shorter than the next. Legs commonly feathered or bristly to or on the toes. Plumage peculiarly soft and lax, without after-shafts; flight perfectly noiseless. Cranial walls widely separated by intervention of spongy diploë. Sternum commonly doubly notched. Chiefly nocturnal *Strigidae*.

Physiognomy not peculiar in any lateral expansion of the cranium; the eyes lateral in direction. No complete facial disc; base of bill not hidden by

¹ Excepting *Sphyrapicus*, in which the tongue is not more protrusible than in ordinary birds.

² Our species falls rather in a restricted family *Aridæ*, as distinguished from *Psittacidae* proper.

appressed bristles. Nostrils wholly in the cere. Outer toe rarely versatile, except *Pandion*, etc.; not shorter than the inner. Basal phalanx of middle toe longer than the second. Legs commonly naked and scutellate or reticulate in some portion of their length; toes always bare and scaly. Plumage compact, usually with after-shafts; flight audible. Cranial walls with little diploë. Sternum commonly single-notched or fenestrate, sometimes entire.

Diurnal *Falconidæ*.

Feet scarcely raptorial, with lengthened, little curved or contractile, weak, short claws. Hallux elevated, shortened, not more than half as long as the fourth toe, with small claw. Front toes all webbed at base; middle toe lengthened; outer not reversible. Basal phalanx of middle toe longer than either of the succeeding. Nostrils perforate. Bill lengthened and comparatively weak, little hooked, contracted in its continuity; tomia not toothed or lobed. Head naked of feathers in greatest part; sparsely bristly. No lower larynx developed. No cæca.

After-shafts absent *Cathartidæ*.

FAMILY OF COLUMBÆ.

With characters essentially as in *Columbæ* (exclusive of those peculiar to *Didunculidæ* and *Dididæ*). Plumage without after-shafts; the feathers with thickened, spongy rachis loosely inserted in the skin. Head small, completely feathered, excepting sometimes a circumorbital space. Tarsi naked or only feathered a little way above. Tail of twelve feathers, or lengthened, eumate, and of fourteen. (Hallux not perfectly incumbent in *Sturnænas*.) *Columbidæ*.

ANALYSIS OF FAMILIES OF GALLINÆ.

Hind toe lengthened, insistent. Tail-feathers twelve. Sides of head and throat with naked spaces. Color greenish *Crucidæ*.

Hind toe shortened, elevated. Tail-feathers usually fourteen or more. No green.

Large. Tarsi, toes, and nasal fossæ naked. Head bare of feathers, sparsely bristly, with wattles and caruncles. A pectoral tuft of bristly feathers. Tarsi usually spurred in the male. Plumage iridescent *Meleagrididæ*.

Medium. Tarsi wholly or in great part, sometimes also the toes, and always the nasal fossæ, feathered. Head completely feathered, excepting a definite papillate strip over the eye. Tail-feathers sixteen or more. Sides of neck usually with lengthened feathers, or a naked distensible area, or both. No spurs. Plumage without iridescence *Tetraonidæ*.

Small. Tarsi, toes, and nasal fossæ naked. Head completely feathered. No peculiar feathers or tympanum on sides of neck. No spurs. Plumage not iridescent *Perdicidæ*.

ANALYSIS OF FAMILIES OF LIMICOLÆ.

Toes not lobate. Tarsi not notably compressed.

Legs extremely long; the tarsus equalling or exceeding the tail, and feet either four-toed and palmate (*Recurvirostra*), or three-toed and semipalmate (*Himantopus*); with the bill much longer than the head, very slender, acute, and curved upward *Recurvirostridæ*.

Legs moderate, stont. Tarsus shorter than tail. Bill hard, more or less contracted at base, with short nasal fossa, gonydeal angle, and ascending

gonys, the tip either compressed and truncate or depressed and acute. Feet three-toed and with basal webbing (*Hæmatopus*), or four-toed and cleft (*Strepsilas*) *Hæmatopodidæ*.

Legs moderate. Tarsus shorter than tail, reticulate. Hind toe wanting (except in *Squatarola*, where very small, and in *Aphriza*). Bill short, straight,—not exceeding the head (generally shorter),—shaped like a pigeon's, with short, broad, soft nasal fossæ separated by a constriction from the enlarged, obtuse, horny terminal part. Head large, globose, contracting suddenly to the bill. Neck short *Charadriidæ*.

Legs moderate. Tarsus shorter than tail, scutellate. Hind toe present. Bill long,—equalling, or oftener exceeding, frequently several times longer than, the head; softish and membranous to the very tip, without constriction in its continuity; straight or variously curved *Scolopacidæ*.

Toes lobate. Tarsi notably compressed.

General characters of *Scolopacidæ*. Body depressed; the under plumage thickened, duck-like. Habits natatorial *Phalaropodidæ*.

ANALYSIS OF FAMILIES OF HERODIONES.

Hallux lengthened, perfectly incumbent, with large claw. Tarsi scutellate. Middle claw pectinate. Bill perfectly straight, tapering, acute. Loral region definitely naked, continuous with covering of the bill. Head narrow, elongate, tapering *Ardeidæ*.

Hallux somewhat reduced, less perfectly incumbent. Tarsi commonly reticulate. Middle claw not pectinate. Lores, gular space and usually more of the head, naked. Bill variously curved or with expanded tip. (Genera *Tantalus*, *Ibis*, *Mycteria*, and *Platalea*.) *Tantalidæ*.

ANALYSIS OF FAMILIES OF ALECTORIDES.

Of great stature, with extremely long neck and legs. Part or all of the head bare. Toes much shorter than the tarsi; with basal webbing, but without lobation; hallux very short, highly elevated. Bill equalling or exceeding the head, compressed, perfectly straight, contracted about the middle, with enlarged acute terminal portion; nasal fossæ wide and deep, with large perforate nostrils . . . *Gruidæ*.

Size moderate and small: neck and legs comparatively short. Head completely feathered, excepting, in the Coots and Gallinules, a broad horny frontal plate. Toes equalling or exceeding the tarsi, simple or lobate. Bill not constricted in the middle, rather shorter than the head, straight and quite stout; or much longer, regularly slender and decurved, with long nasal fossæ. Nostrils incompletely or not perforate *Rallidæ*.

ANALYSIS OF FAMILIES OF LAMELLIROSTRES.

Of great stature, with extraordinarily lengthened neck and legs. Bill of unique shape, bent abruptly down from the middle. Tibiæ naked below. Hind toe minute or absent. Wings rounded. Red the chief color *Phænicopteridæ*.

Of moderate size; the neck short, or, when lengthened, not accompanied by co-ordinately lengthened legs, these being always shorter than the wing. Bill straight. Tibiæ feathered below. Hind toe present: well developed and functional, though short *Anatidæ*.

ANALYSIS OF FAMILIES OF **STEGANOPODES**.

Bill rather longer than head, cleft to eyes, very stout at base, tapering to the decurved, but not hooked, tip. Nostrils abortive. Gular sac moderate, naked. Wings rather long, pointed. Tail long, stiff, cuneate, twelve to fourteen feathered. Feet nearly beneath centre of equilibrium. General configuration goose-like . . . *Sulida*.

Bill several times longer than head, slender but strong, depressed, perfectly straight, with small distinct hooked nail at end. Nostrils very small. Gular sac enormous. Mandibular rami meeting only at tip. Wings extremely long, with upward of forty remiges. Tail short, rounded, of twenty or more feathers. Legs beneath centre of equilibrium, extremely short and stout . . . *Pelicanida*.

Bill about as long as head, stout, straight, scarcely tapering, strongly hooked. Nostrils abortive. Gular sac moderate, but evident; mostly naked. Wings short. Tail large, fan-shaped, scansional, of twelve to fourteen broad stiff feathers, exposed to the base. Legs inserted far behind centre of equilibrium . . . *Graculida*.

Bill rather longer than head, slender, perfectly straight, tapering to an acute tip. Gular sac small. Nostrils minute. Wings and tail, and general configuration, as in the last . . . *Plotida*.

Bill much longer than head, straight, stout, strongly hooked. Nostrils very small. Gular sac well developed. Wings exceedingly long, strong, and pointed. Tail exceedingly long, deeply forked. Feet extraordinarily short; tarsi partly feathered . . . *Tachypetida*.

Bill about as long as head, straight, stout, tapering to an acute tip. Nostrils small. Gular sac rudimentary, feathered. Wings moderate, pointed. Tail short, but with two central feathers extraordinarily prolonged and filamentous. Feet small, beneath centre of equilibrium . . . *Phæthontida*.

ANALYSIS OF FAMILIES OF **LONGIPENNES**.

Nostrils not tubular, lateral, perforate. Bill with continuous covering, or only broken by a sort of cere, hooked or straight to the end. Hallux small and elevated, but always present . . . *Larida*.

Nostrils tubular, disjoined and lateral, or oftenest superior and united in one double-barrelled tube. Covering of bill in several pieces; bill always hooked. Hallux minute, rudimentary, or absent . . . *Procellariida*.

ANALYSIS OF FAMILIES OF **PYGOPODES**.

Feet four-toed, palmate. Hallux lobate, connected at base with base of inner toe. Tail perfect. Head closely and completely feathered. Nostrils with a depending lobe or flap. Bill straight, compressed, acute . . . *Colymbida*.

Feet four-toed, lobate. Hallux lobate, free. Tail rudimentary. Head with a naked loreal strip and bristly or variously lengthened feathers. Nostrils simple. Bill straight or decurved at end, compressed, acute . . . *Podicipida*.

Feet three-toed, palmate. Hallux absent. Tail perfect. Head closely feathered or variously crested. Nostrils simple. Bill of indeterminate shape . . . *Alcida*.

NORTH AMERICAN BIRDS.

FAMILY **TURDIDÆ**. — THE THRUSHES.

THE *Turdidæ*, with the *Saxicolidæ* and *Cinclidæ*, form a group closely related, by common characters, and appreciably different from the other *Oscines* with slender bills and specially insectivorous habits, having, like them, ten primaries (the first much shorter than the second, but nearly always appreciable), and the nostrils uncovered. The great family of *Sylvicolidæ*, with similar characters of the bill, never present more than nine primaries. The most striking of these common characters is seen in the deeply cleft toes, of which the outer is united by the basal joint alone to the middle toe, while the inner is separated almost to the very base of its first joint.¹ The frontal feathers extend, with rare exceptions, to the very nostrils. The bill is elongated and subulate, moderately slender, and usually notched at tip; the culmen moderately curved from the base, and the mouth well provided with bristles, except in a few cases. Usually the scutellæ covering the front and sides of the tarsus are fused into one continuous plate, or else scarcely appreciable, except on the inner edge only; in the Mocking Thrushes they are, however, distinctly marked. The lateral toes are nearly equal, the outer rather the longer. With these as some of the principal characteristics, they may be distinguished from each other as follows: —

NOTE. — In the present work the length of the tail is measured from the coccyx, inside of the skin, and not, as usually the case, from the base of the quills at their insertion. The wings are measured from the carpal joint, with dividers.

¹ In a perfectly fresh specimen of *Turdus mustelinus*, the basal half of the first phalanx of the inner toe is connected with the first joint of the middle toe by a membrane which stretches across to within two fifths of the end of the latter; there appears, however, to be no ligamentous adhesion. The basal joint of the outer toe is entirely adherent, and a membrane extends from nearly the basal half of the second joint to the distal end of the first joint of the middle toe. When this connecting membrane becomes dried the division of the toes appears considerably greater.

When the toes are all extended in line with the tarsus, the hind claw stretches a little beyond the lateral and scarcely reaches the base of the middle claw.

The plates at the upper surface of the basal joints of the toes are quadrangular and opposite each other.

A. Nostrils oval. Loral and frontal feathers with bristly points, or interspersed with bristles; rictus with longer or shorter bristles.

Saxicolidæ. Wings very long and much pointed, reaching beyond the middle of the short square or emarginated tail, and one and a half times or more the length of the latter. The spurious primary very short, the second quill longer than the fourth. In the closed wing the outer secondary reaches only about two thirds the length of longest primary.

Turdidæ. Wings moderate, more rounded, not reaching beyond middle of the often rounded tail, and not more than one and a third the latter, usually more nearly equal. Spurious primary sometimes half the length of second quill; the second quill shorter than the fourth. In the closed wing the outer secondary reaches three fourths or more the length of longest primary.

B. Nostrils linear, in lower edge of nasal membrane. Loral and frontal feathers soft and downy, and no bristles or bristly points whatever about the mouth.

Cinclidæ. Body very short and broad. Wings short, rounded, and concave.

The American *Sylviidæ* are in some respects very closely related to the *Saxicolidæ*, but may be distinguished by their much smaller size, more slender and depressed bill, more strongly bristled rictus, etc.; on which account they are more strictly "fly-catchers," taking their prey in great part on the wing.

Of the three families, the *Turdidæ* contain a great variety of forms, and exhibit widely different characters, rendering it exceedingly difficult to arrange them in any systematic or regular sequence, or to accurately define their boundaries. In the *Birds of North America*, the Mocking Thrushes were placed among the Wrens, on account of the distinct tarsal sentellæ, and other characters. We are now, however, inclined to believe, with Dr. Selater, that their place is with the recognized *Turdidæ*; and, among other reasons, on the ground of their more deeply cleft toes, and greater extension forward of frontal feathers. The following synopsis of the North American forms will serve the purpose of determining the genera, even if these are not arranged or combined in a strictly natural manner.

A. Turdinæ.—Tarsus covered anteriorly with a continuous plate without scales.

Wings decidedly longer than the tail, which is nearly even. Bill considerably shorter than the head.

First quill usually not one fourth the second. Wings pointed. Tarsus hardly the length of head, but yet longer than middle toe; outstretched toes falling short of tip of tail *Turdus*.

B. Miminæ.—Tarsi sentellate anteriorly; scales seven.

Wings decidedly longer than the tail, which is nearly even. Tarsus as long as the head.

Bill decidedly shorter than the head, scarcely notched; wings pointed; first quill less than half the second, third and fourth longest. Claws not peculiar. Bristles prominent. Tarsus considerably longer than middle toe and claw. *Oreoscoptes*

Wings decidedly shorter than the tail, which is considerably graduated;
first quill half or more than half the second.

Bill notched at tip, shorter than head; straight.

Scutellæ very distinct; gonys straight, or even declining at tip. *Mimus*.

Scutellæ more or less obsolete; gonys convex, ascending at tip. *Galeoscoptes*.

Bill not notched at tip, lengthened; sometimes much decurved. *Harporhynchus*.

NOTE. — In the Review of American Birds, I., May, 1866, 409, I have advanced the suggestion that the N. American genus *Myiadestes*, usually placed under the *Ampelides*, really belongs under *Turdidae* in a group *Myiadestinae*. The relationships are certainly very close, as is shown by the characters given below.

COMMON CHARACTERS. — Tarsi without regular transverse scutellæ, except at lower end. Wings acute, pointed, as long as or longer than tail, which is but slightly graduated. First primary rarely half second, which exceeds the secondaries. Base of quills buffy yellow, as are inner edges. Tail spotted or varied at the end. Young birds with many light spots. Very melodious singers.

Myiadestinae. Bill short, much depressed; mouth deeply cleft; width at base about equal to the distance from nostril to tip, or greater; commissure more than twice distance from nostrils to tip of bill, and nearly two and a half times length of gonys. Legs weak; tarsi rather longer than middle toe and claw. Tail feathers tapering slightly from base to near tip, giving a slightly euneate appearance to the tail.

Turdinae. Bill stouter, more lengthened; narrow at base and more compressed; width at base less than distance from nostril to tip; commissure not more than twice distance from nostrils to tip of bill, and about twice length of gonys. Tarsi stouter, longer than middle toe and claw. Tail feathers widening slightly from base to near tip, giving a parallel-sided or slightly fan-shaped appearance to the tail.

The *Miminae* differ, as already mentioned, in the scutellate tarsi; more rounded wings, etc. — S. F. B.

SUBFAMILY TURDINÆ.

There are several American genera of *Turdinae* not found north of Mexico as yet, although it is not impossible that one of these (*Catharus*) may hereafter be detected within the limits of the United States. The species of *Catharus* resemble the North American wood-thrushes (*Hylocichla*); but the spurious or first primary quill is longer (from one half to one third the second quill), the wings are rounded, not pointed, the tarsus is longer than the head, and the outstretched toes extend beyond the tail. The species to be looked for are *C. melpomene* and *occidentalis*.¹

The North American species of *Turdinae*, while retained under the single genus *Turdus*, yet constitute several distinct groups, which we may call subgenera.

GENUS TURDUS, LINNÆUS.

Turdus, LINNÆUS, Syst. Nat., ed. 10, 1758, 168. (Type, *Turdus viscivorus* of Europe.) — BAIRD, Rev. Am. Birds.

GEN. CHAR. Bill conical, subulate, shorter than the head; the tip gently decurved and notched (except in *Hesperocichla*); the rictus with moderate bristles; the wings rather

¹ See Baird, Review American Birds, I, 1864, 7, 8.

long and pointed, with small first primary (less than one fourth the second); wings considerably longer than the tail, which is firm, nearly even, with broad feathers. Tarsi variable, seldom as long as the skull, the scutellæ fused into a continuous plate, only in rare individual instances showing indications of the lines of separation.

The genus *Turdus* is very cosmopolitan, occurring nearly throughout the globe, excepting in *Australia*, and embraces species of highest perfection as singers. In the large number of species known there are many variations in external form, but the transition from one to the other is so gradual as to render it very difficult to separate them into different genera. The sections of the group we adopt are the following:—

Sexes similar.

Hylocichla. Smallest species. Bill short, broad at base; much depressed. Tarsi long and slender, longer than middle toe and claw, by the additional length of the claw; outstretched legs reaching nearly to tip of tail. Body slender. Color: above olivaceous or reddish, beneath whitish; breast spotted; throat without spots.

Turdus. Bill stouter and higher. Tarsi stout and short, scarcely longer than middle toe and claw. Body stout, generally whitish beneath and spotted. (Second quill longer than fifth?)

Planesticus. Similar to preceding. (Second quill shorter than fifth?) Beneath mostly uni-colored; unstreaked except the throat, which is whitish with dark streaks.

Sexes dissimilar.

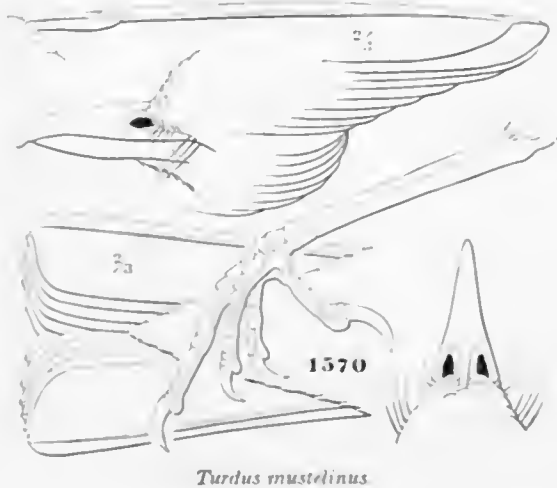
Merula. Similar to *Turdus*. Male usually more or less black, especially on the head; females brownish, often with streaked throats. Bill distinctly notched.

Hesperocichla. Similar to *Turdus*. Male reddish beneath, with a black collar. Bill without notch.

SUBGENUS **HYLOCICHLA**, BAIRD.

Hylocichla, BAIRD (s. g.), Rev. Am. Birds, 1864, 12. (Type, *Turdus mustelinus*.)

The essential characters of *Hylocichla* have already been given. The



subgenus includes the small North American species, with *Turdus mustelinus*, Gm., at the head as type, which are closely connected on the one side with *Catharus*, by their lengthened tarsi, and with *Turdus* by the shape of the wing. The bills are shorter, more depressed, and broader at base than in typical *Turdus*, so much so that the species have frequently been described under *Muscicapa*.

It is not at all improbable that naturalists may ultimately conclude to consider the group as of generic rank.

In this group there appears to be five well-marked forms or "species." They are, *mustelinus*, Gm., *pallusi*, Caban., *fuscescens*, Steph., *swainsoni*.

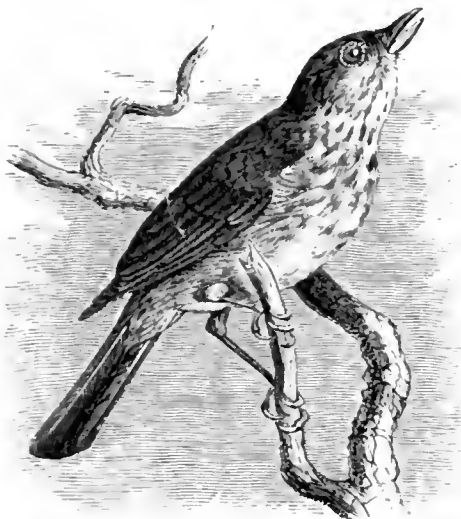
Caban., and *alicia*, Baird. The first-named is totally unlike the rest, which are more closely related in appearance.

In studying carefully a very large series of specimens of all the species, the following facts become evident:—

1. In autumn and winter the "olive" color of the plumage assumes a browner cast than at other seasons; this variation, however, is the same in all the species (and varieties), so that in autumn and winter the several species differ from each other as much as they do in spring and summer.

Of these five species, two only (*pallasi* and *swainsoni*) inhabit the whole breadth of the continent; and they, in the three Faunal Provinces over which they extend, are modified into "races" or "varieties" characteristic of each region. The first of these species, as the *pallasi* var. *pallasi*, extends westward to the Rocky Mountains, and migrates in winter into the South; specimens are very much browner in the winter than in spring; but in the Rocky Mountain region is a larger, grayer race, the var. *auduboni*. This, in its migrations, extends along the central mountain region through Mexico to Guatemala; specimens from the northern and southern extremes of this range are identical in all the specific characters; but the southern specimens, being in the fall and winter dress, are browner in color than northern ones (spring birds); an autumnal example from Cantonment Burgwyn, N. M., is as brown as any Central American specimen. Along the Pacific Province, from Kodiak to Western Mexico, and occasionally straggling eastward toward the Rocky Mountain system, there is the var. *nanus*, a race smaller than the var. *pallasi*, and with much the same colors as var. *auduboni*, though the rufous of the tail is deeper than in either of the other forms. In this race, as in the others, there is no difference in size between specimens from north and south extremes of its distribution, because the breeding-place is in the North, all Southern specimens being winter sojourners from their Northern birthplace.

The *T. swainsoni* is found in abundance westward to the western limit of the Rocky Mountain system; in the latter region specimens at all seasons have the olive of a clearer, more greenish shade than in any Eastern examples; this clearer tint is analogous with that of the Rocky Mountain form of *pallasi* (*auduboni*). In precisely the same region inhabited by the *pallasi* var. *nanus* the *swainsoni* also has a representative form,—the var. *ustulatus*. This resembles in pattern the var. *swainsoni*, but the olive above is decidedly more rufescent,—much as in Rocky Mountain specimens of



Turdus ustulatus.

T. fuscescens; the spots on jugulum and breast are also narrower, as well as hardly darker in color than the back; and the tail is longer than in Rocky Mountain *swainsoni*, in which latter it is longer than in Eastern examples. The remaining species — *mustelinus*, *fuscescens*, and *alicia* — extend no farther west than the Rocky Mountains; the first and last only toward their eastern base, while the second breeds abundantly as far as the eastern limit of the Great Basin.

The *T. fuscescens*, from the Rocky Mountains, is considerably darker in color above, while the specks on the throat and jugular are sparser or more obsolete than in Eastern birds.

In *T. mustelinus*, the only two Western specimens in the collection (Mount Carroll, Ills., and Fort Pierre) have the rump of a clearer grayish than specimens from the Atlantic Coast; in all other respects, however, they appear to be identical. Some Mexican specimens, being in winter plumage, have the breast more buffy than Northern (spring or summer) examples, and the rufous of the head, etc. is somewhat brighter.

In *alicia*, no difference is observed between Eastern and Western birds; the reason is, probably, that the breeding-ground of all is in one province, though their migrations may extend over two. There is, however, a marked difference between the spring and autumn plumage; the clear grayish of the former being replaced, in the latter, by a snuffy brown, or sepia tint, — this especially noticeable on wings and tail.

The following synopsis is intended to show the characters of the different species and varieties.

1. *Spots beneath rounded, covering breast and sides.*

A. Rufous brown above, becoming much brighter toward the bill, and more olivaceous on the tail. Beneath white; whole breast with rounded spots. Nest on tree; eggs pale blue.

1. ***T. mustelinus*.** Beneath nearly pure white, with rounded blackish spots over the whole breast, sides, and upper part of abdomen; wing, 4.25; tail, 3.05; culmen, .80; tarsus, 1.26. *Hab.* Eastern Province United States, south to Guatemala and Honduras. Cuba and Bermuda of West Indies.

2. *Spots beneath triangular, on breast only.*

B. Entirely uniform in color above, — olivaceous, varying to reddish or greenish with the species. Beneath whitish, with a wash of brownish across the breast and along sides. Spots triangular, and confined to the breast. Nest on trees or bushes; eggs blue spotted with brownish; except in *T. fuscescens*, which nests on the ground, and lays plain blue eggs.

a. *No conspicuous light orbital ring.*

2. ***T. fuscescens*.** Yellowish-rufous or olive-fulvous above; a strong wash of pale fulvous across the throat and jugulum, where are very indistinct cuneate spots of same shade as the back. Wing, 4.10; tail, 3.90; culmen, .70; tarsus, 1.15. *Hab.* Eastern Province of North America. North to Nova Scotia and Fort Garry. West to Great Salt Lake. South (in winter) to Panama and Brazil. Cuba.

3. *T. aliciae*. Grayish clove-brown above; breast almost white, with broad, blackish spots; whole side of head uniform grayish. Wing, 4.20; tail, 3.20; culmen, .77; tarsus, 1.15. *Hab.* Eastern Province North America from shore of Arctic Ocean, Fort Yukon, and Kodiak to Costa Rica. West to Missouri River. Cuba.

b. A conspicuous orbital ring of buff.

4. *T. swainsoni*.

Greenish-olive above, breast and sides of head strongly tinged with buff. Spots on breast broad, distinct, nearly black. Length, 7.00; wing, 3.90; tail, 2.90; culmen, .65; tarsus, 1.10. *Hab.* Eastern and Middle Provinces of North America. North to Slave Lake, south to Ecuador, west to East Humboldt Mountains var. *swainsoni*.

Brownish-olive above, somewhat more rufescent on wing; breast and head strongly washed with dilute rufous. Spots on breast narrow, scarcely darker than back. Wing, 3.85; tail, 3.00; culmen, .70; tarsus, 1.10. *Hab.* Pacific Province of United States. Guatemala var. *ustulatus*.

c. Above olivaceous, becoming abruptly more reddish on upper tail-coverts and tail. Spots as in *swainsoni*, but larger and less transverse, — more sharply defined. An orbital ring of pale buff. Nest on ground; eggs blue, probably unspotted.

5. *T. pallasi*.

Olivaceous of upper parts like *ustulatus*. Reddish of upper tail-coverts invading lower part of rump; no marked difference in tint between the tail and its upper coverts. Flanks and tibiae yellowish olive-brown; a faint tinge of buff across the breast. Eggs plain. Wing, 3.80; tail, 3.00; culmen, .70; tarsus, 1.20. *Hab.* Eastern Province of United States (only?) . . . var. *pallasi*.

Olivaceous of upper parts like *swainsoni*. Reddish of tail not invading the rump, and the tail decidedly more castaneous than the upper coverts. Beneath almost pure white; scarcely any buff tinge on breast; flanks and tibiae grayish or plumbeous olive. Size smaller than *swainsoni*; bill depressed. Wing, 3.50; tail, 2.60; culmen, .60; tarsus, 1.15. *Hab.* Western Province of North America, from Kodiak to Cape St. Lucas. East to East Humboldt Mountains var. *nanus*.

Olivaceous above, like preceding; the upper tail-coverts scarcely different from the back. Tail yellowish-rufous. Beneath like *nanus*. Size larger than *swainsoni*. Wing, 4.20; tail, 3.35; culmen, .80; tarsus, 1.30. *Hab.* Rocky Mountains. From Fort Bridger, south (in winter) to Southern Mexico . . . var. *auduboni*.

Turdus mustelinus, GMELIN.

THE WOOD THRUSH.

Turdus mustelinus, GMELIN, Syst. Nat. I, 1788, 817. — AUDUBON, Orn. Biog. I, 1832, 372, pl. 73. — IB. Birds Am. III, 1841, 24, pl. 144. — D'ORB. La Sagra's Cuba Ois. 1840, 49. — BAIRD, Birds N. Am. 1858, 212. — IB. Rev. Am. Birds, 1864, 13. — SCLATER, P. Z. S. 1856, 294, and 1859, 325. — JONES, Nat. in Bermuda, 26. — GUNDLACH,

Repertorio, 1865, 228. — MAYNARD. — SAMUELS, 146. *Turdus melodus*, WILS. Am. Orn. I, 1808, 35, pl. ii. *Turdus densus*, BONAP. Comptes Rendus, XXVIII, 1853, 2. — IB. Notes Delattre, 1854, 26 (Tabasco).

Additional figures: VIEILLOT, Ois. Am. Sept. II, pl. lxii. — WILSON, Am. Orn. I, pl. ii.

SP. CHAR. Above clear cinnamon-brown, on the top of the head becoming more rufous, on the rump and tail olivaceous. The under parts are clear white, sometimes tinged with buff on the breast or anteriorly, and thickly marked beneath, except on the chin and throat and about the vent and tail-coverts, with sub-triangular, sharply defined spots of blackish. The sides of the head are dark brown, streaked with white, and there is also a maxillary series of streaks on each side of the throat, the central portion of which sometimes has indications of small spots. Length, 8.10 inches; wing, 4.25; tail, 3.05; tarsus, 1.26. Young bird similar to adult, but with rusty yellow triangular spots in the ends of the wing coverts.

HAB. U. S. east of Missouri plains, south to Guatemala. Bermuda (not rare). Cuba. LA SAGRA; GUNDELACH. Honduras, MOORE. Cordova, SCL. Orizaba (winter), SCHUCHER.

HABITS. The Wood Thrush, without being anywhere a very abundant species, is common throughout nearly every portion of the United States between the Mississippi River and the Atlantic. It breeds in every portion of the same extended area, at least as far as Georgia on the south and Massachusetts on the north. Beyond the last-named State, it rarely, if ever, breeds on the coast. In the interior it has a higher range, nesting around Hamilton, C. W. So far as I am aware it is unknown, or very rare, in the States of Vermont, New Hampshire, and Maine.

It makes its appearance early in April in the Middle States, but in New England not until four or five weeks later, appearing about the 10th of May. Their migrations in fall are more irregular, being apparently determined by the abundance of their food. At times they depart as early as the first of September, but sometimes not until the last of October. It winters in Central America, where it is quite abundant at that season.

The favorite localities of the Wood Thrush are the borders of dense thickets, or low damp hollows shaded by large trees. Yet its habits are by no means so retiring, or its nature so timid, as these places of resort would lead us to infer. A small grove in Roxbury, now a part of Boston, in close proximity to a dwelling-house, was for many years the favorite resort of these birds, where several pairs nested and reared their young, rarely even leaving their nests, which were mostly in low bushes, wholly unmindful of the curious children who were their frequent visitors. The same fearless familiarity was observed at Mount Auburn, then first used as a public cemetery. But in the latter instance the nest was always placed high up on a branch of some spreading tree, often in conspicuous places, but out of reach. Mr. J. A. Allen refers to several similar instances where the Wood Thrush did not show itself to be such a recluse as many describe it. In one case a pair built their nest within the limits of a thickly peopled village, where there were but few trees, and a scanty undergrowth. In another a Wood Thrush lived for several successive summers among the elms and maples of Court Square in the city of

Springfield, Mass., undisturbed by the passers by or the walkers beneath, or the noise and rattle of the vehicles on the contiguous streets.

The song of this thrush is one of its most remarkable and pleasing characteristics. No lover of sweet sounds can have failed to notice it, and, having once known its source, no one can fail to recognize it when heard again. The melody is one of great sweetness and power, and consists of several parts, the last note of which resembles the tinkling of a small bell, and seems to leave the conclusion suspended. Each part of its song seems sweeter and richer than the preceding.

The nest is usually built on the horizontal branch of a small forest-tree, six or eight feet from the ground, and, less frequently, in the fork of a bush. The diameter is about 5 inches, and the depth $3\frac{3}{4}$, with a cavity averaging 3 inches across by $2\frac{1}{4}$ in depth. They are firm, compact structures, chiefly composed of decayed deciduous leaves, closely impacted together, and apparently thus combined when in a moistened condition, and afterward dried into a firmness and strength like that of parchment. These are intermingled with, and strengthened by, a few dry twigs, and the whole is lined with fine roots and a few fine dry grasses. Occasionally, instead of the solid frame of impacted leaves, we find one of solidified mud.

The eggs of the Wood Thrush, usually four in number, sometimes five, are of a uniform deep-blue tint, with but a slight admixture of yellow, which imparts a greenish tinge. Their average measurements are 1.00 by .75 inch.

***Turdus fuscescens*, STEPHENS.**

TAWNY THRUSH; WILSON'S THRUSH.

- Turdus mustelinus*, WILSON, Amer. Ornithology, V, 1812, 98, pl. 43 (not of GMELIN).
Turdus fuscescens, STEPHENS, Shaw's Gen. Zool. Birds, X, 1, 1817, 182. CAB. JOUR. 1855, 470 (Cuba). — BAIRD, Birds N. Am. 1858, 214. — IB. Rev. Am. B. 1864, 17. — GUNDEL Repertorio, 1865, 228 (Cuba, not rare). PELZELN, Orn. Bras. II, 1868, 92. (San Vicente, Brazil, December.) — SAMUELS, 150. — SCLATER, P. Z. S. 1859, 326. — IB. Catal. Am. Birds, 1861, 2, No. 10. *Turdus silens*, VIEILL. Encyclop. Méth. II, 1823, 647 (based on *T. mustelinus*, WILS.). *Turdus wilsonii*, BON. OBS. Wils. 1825, No. 73. *Turdus minor*, D'ORB. La Sagra's Cuba, Ois. 1840, 47, pl. v (Cuba).

SP. CHAR. Above, and on sides of head and neck, nearly uniform light reddish-brown, with a faint tendency to orange on the crown and tail. Beneath, white; the fore part of the breast and throat (paler on the chin) tinged with pale brownish-yellow, in decided contrast to the white of the belly. The sides of the throat and the fore part of the breast, as colored, are marked with small triangular spots of light brownish, nearly like the back, but not well defined. There are a few obsolete blotches on the sides of the breast (in the white) of pale olivaceous; the sides of the body tinged with the same. Tibiæ white. The lower mandible is brownish only at the tip. The lores are ash-colored, the orbital region grayish. Length, 7.50; wing, 4.25; tail, 3.20; tarsus, 1.20.

HAB. Eastern North America, Halifax to Fort Bridger, and north to Fort Garry Cuba, Panama, and Brazil (winter). Orizaba (winter), SUMICHRAST.

HABITS. This species is one of the common birds of New England, and is probably abundant in certain localities throughout all the country east of the Rocky Mountains, as far to the north as the 50th parallel, and possibly as far as the wooded country extends. Mr. Maynard did not meet with it in Northern New Hampshire. Mr. Wm. G. Winton obtained its nest and eggs at Halifax, N. S.; Mr. Boardman found them also on the Gulf of St. Lawrence, and at St. Stephen's, N. B.; Mr. Couper at Quebec; Mr. Kriehoff at Three Rivers, Canada; Donald Gunn at Selkirk and Red River; and Mr. Kumlien and Dr. Hoy in Wisconsin. Mr. McIlwraith also gives it as common at Hamilton, West Canada. It breeds as far south as Pennsylvania, and as far to the west as Utah, and occurs, in the breeding season, throughout Maine, New Brunswick, Nova Scotia, and Canada.

Mr. Ridgway found this thrush very abundant among the thickets in the valleys of the Provo, Weber, and Bear rivers, in Utah, and very characteristic of those portions of the country.

It arrives in Massachusetts early in May, usually with the first blossoms of the pear, ranging from the 5th to the 20th. It is strictly of woodland habits, found almost entirely among clumps of trees, and obtaining its food from among their branches, or on the ground among the fallen leaves. It moves south from the 10th to the 25th of September, rarely remaining till the first week in October.

It is timid, distrustful, and retiring; delighting in shady ravines, the edges of thick close woods, and occasionally the more retired parts of gardens; where, if unmolested, it will frequent the same locality year after year.

The song of this thrush is quaint, but not unmusical; variable in its character, changing from a prolonged and monotonous whistle to quick and almost shrill notes at the close. Their melody is not unfrequently prolonged until quite late in the evening, and, in consequence, in some portions of Massachusetts these birds are distinguished with the name of Nightingale, — a distinction due rather to the season than to the high quality of their song. Yet Mr. Ridgway regards it, as heard by himself in Utah, as superior in some respects to that of all others of the genus, though far surpassed in mellow richness of voice and depth of metallic tone by that of the Wood Thrush (*T. mustelinus*). To his ear there was a solemn harmony and a beautiful expression which combined to make the song of this surpass that of all the other American Wood Thrushes. The beauty of their notes appeared in his ears "really inspiring; their song consisting of an inexpressibly delicate metallic utterance of the syllables *tu-weel' ah, tu-weel' ah, twil' ah, twil' ah*, accompanied by a fine trill which renders it truly seductive." The last two notes are said to be uttered in a soft and subdued undertone, producing thereby, in effect, an echo of the others.

The nest is always placed near the ground, generally raised from it by a thick bed of dry leaves or sticks; sometimes among bushes, but never in the fork of a bush or tree, or if so, in very rare and exceptional cases.

When incubation has commenced, the female is reluctant to leave her nest. If driven off she utters no complaint, but remains close at hand and returns at the first opportunity.

They construct their nest early in May, and the young are hatched in the latter part of that month, or the first of June. They raise two broods in the season. The nest, even more loosely put together than that of the Ground Swamp Robin (*T. pallasii*), is often with difficulty kept complete. It is about 3 inches in height, $4\frac{1}{2}$ in diameter, with a cavity $1\frac{1}{2}$ inches deep and 3 in width, and composed of dry bark, dead leaves, stems, and woody fibres, intermingled with grasses, caricas, sedges, etc., and lined with soft skeleton leaves. A nest from Wisconsin was composed entirely of a coarse species of *Sparganium*; the dead stalks and leaves of which were interwoven with a very striking effect.

The eggs, usually four, sometimes five in number, are of a uniform green color, with a slight tinge of blue, and average .94 by .66 of an inch in diameter.

Turdus aliciae, BAIRD.

GRAY-CHEEKED THRUSH; ALICE'S THRUSH.

Turdus aliciae, BAIRD, Birds N. Am. 1858, 217, plate 81, f. 2. — IB. Review Am. Birds. I, 1864, 21. — COUES, Pr. Ac. N. Sc. Aug. 1861, 217 (Labrador). — IB. Catal. Birds of Washington. — GUNDLACH, Repertorio, 1865, 229 (Cuba). — LAWRE, Ann. N. Y. Lye. IX, 91 (Costa Rica). — DALL and BANNISTER, Birds Alaska. — RIDGWAY, Report.

SP. CHAR. Above nearly pure dark olive-green; sides of the head ash-gray; the chin, throat, and under parts white; purest behind. Sides of throat and across the breast with arrow-shaped spots of dark plumbeous-brown. Sides of body and axillaries dull grayish-olivaceous. Tibiæ plumbeous; legs brown. Length, nearly 8 inches; wing, 4.20; tail, 3.20; tarsus, 1.15.

HAB. Eastern North America to shores of Arctic Ocean, and along northern coast from Labrador to Kodiak, breeding in immense numbers between the mouths of Mackenzie and Coppermine. West to Fort Yukon and Missouri River States. Winters south to Costa Rica. Chiriqui, SALVIN; Cuba, GUNDLACH.

As originally described, this species differs from *swainsoni* in larger size, longer bill, feet, and wings especially, straighter and narrower bill. The back is of a greener olive. The breast and sides of the head are entirely destitute of the buff tinge, or at best this is very faintly indicated on the upper part of the breast. The most characteristic features are seen on the side of the head. Here there is no indication whatever of the light line from nostril to eye, and scarcely any of a light ring round the eye,—the whole region being grayish-olive, relieved slightly by whitish shaft-streaks on the ear coverts. The sides of body, axillars, and tibiæ are olivaceous-gray, without any of the fulvous tinge seen in *swainsoni*. The bill measures .40 from tip to nostril, sometimes more; tarsi, 1.21;

wing, 4.20; tail, 3.10,—total, about 7.50. Some specimens slightly exceed these dimensions; few, if any, fall short of them.

In autumn the upper surface is somewhat different from that in spring, being less grayish, and with a tinge of rich sepia or snuff-brown, this becoming gradually more appreciable on the tail.

A specimen from Costa Rica is undistinguishable from typical examples from the Eastern United States.

HABITS. This species, first described in the ninth volume of the Pacific Railroad Surveys, bears so strong a resemblance to the Olive-backed Thrush (*T. swainsoni*), that its value as a species has often been disputed. It was first met with in Illinois. Since then numerous specimens have been obtained from the District of Columbia, from Labrador, and the lower Mackenzie River. In the latter regions it was found breeding abundantly. It was also found in large numbers on the Anderson River, but was rare on the Yukon, as well as at Great Slave Lake, occurring there only as a bird of passage to or from more northern breeding-grounds.

In regard to its general habits but little is known. Dr. Cones, who found it in Labrador, breeding abundantly, speaks of meeting with a family of these birds in a deep and thickly wooded ravine. The young were just about to fly. The parents evinced the greatest anxiety for the safety of their brood, endeavoring to lead him from their vicinity by fluttering from bush to bush, constantly uttering a melancholy *phewgh*, in low whistling tone. He mentions that all he saw uttered precisely the same note, and were very timid, darting into the most impenetrable thickets.

This thrush is a regular visitant to Massachusetts, both in its spring and in its fall migration. It arrives from about the first to the middle of May, and apparently remains about a week. It passes south about the first of October. Occasionally it appears and is present in Massachusetts at the same time with the *Turdus swainsoni*. From this species I hold it to be unquestionably distinct, and in this opinion I am confirmed by the observations of two very careful and reliable ornithologists, Mr. William Brewster of Cambridge, one of our most promising young naturalists, and Mr. George O. Welch of Lynn, whose experience and observations in the field are unsurpassed. They inform me that there are observable between these two forms certain well-marked and constant differences, that never fail to indicate their distinctness with even greater precision than the constant though less marked differences in their plumage.

The *Turdus aliciae* comes a few days the earlier, and is often in full song when the *T. swainsoni* is silent. The song of the former is not only totally different from that of the latter, but also from that of all our other Wood Thrushes. It most resembles the song of *T. pallasi*, but differs in being its exact inverse, for whereas the latter begins with its lowest notes and proceeds on an ascending scale, the former begins with its highest, and concludes with its lowest note. The song of the *T. swain-*

soni, on the other hand, exhibits much less variation in the scale, all the notes being of nearly the same altitude.

I am also informed that while the *T. swainsoni* is far from being a timid species, but may be easily approached, and while it seems almost invariably to prefer the edges of the pine woods, and is rarely observed in open grounds or among the bare deciduous trees, the habits of the *T. aliciae* are the exact reverse in these respects. It is not to be found in similar situations, but almost always frequents copses of hard wood, searching for its food among their fallen leaves. It is extremely timid and difficult to approach. As it stands or as it moves upon the ground, it has a peculiar erectness of bearing which at once indicates its true specific character so unmistakably that any one once familiar with its appearance can never mistake it for *T. swainsoni* nor for any other bird.

The nests measure about 4 inches in diameter and $2\frac{3}{4}$ in height. The cavity is 2 inches deep, and its diameter $2\frac{1}{2}$ inches. They are unusually compact for the nest of a thrush, and are composed chiefly of an elaborate interweaving of fine sedges, leaves, stems of the more delicate *Equisetaceæ*, dry grasses, strips of fine bark, and decayed leaves, the whole intermingled with the paniculated inflorescence of grasses. There is little or no lining other than these materials. These nests were all found, with but few exceptions, on the branches of low trees, from two to seven feet from the ground. In a few exceptional cases the nests were built on the ground.

Occasionally nests of this species are found constructed with the base and sides of solid mud, as with the common Robin (*Turdus migratorius*). In these, as also in some other cases, their nests are usually found on or near the ground. So far as I am aware neither its occasional position on the ground, nor its mud frames, are peculiarities ever noticeable in nests of *T. swainsoni*.

The eggs were usually four in number. Their color is either a deep green tint, or green slightly tinged with blue; and they are marked with spots of russet and yellowish-brown, varying both in size and frequency. Their mean length is .92 of an inch, and their mean breadth .64. The maximum length is .94 and the minimum .88 of an inch. There is apparently a constant variation from the eggs of the *T. swainsoni*; those of the *aliciae* having a more distinctly blue ground color. The nests are also quite different in their appearance and style of structure. The *Hypnum* mosses, so marked a feature in the nests of *T. swainsoni*, as also in those of *T. ustulatus*, are wholly wanting in those of *T. aliciae*.

This bird and the robin are the only species of our thrushes that cross the Arctic Circle to any distance, or reach the shore of the Arctic Ocean. It occurs from Labrador, all round the American coast, to the Aleutian Islands, everywhere bearing its specific character as indicated above. It is extremely abundant on and near the Arctic coast, between the mouth of

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the Mackenzie River and the Coppermine, more than 200 specimens (mostly with their eggs) having been sent thence to the Smithsonian Institution by Mr. MacFarlane. In all this number there was not a single bird that had any approach to the characters of *T. swainsoni*, as just given. From the Slave Lake region, on the other hand, *T. swainsoni* was received in nearly the same abundance, and unmixed during the breeding season with *T. alicola*.

***Turdus swainsoni*, CABANIS.**

OLIVE-BACKED THRUSH; SWAINSON'S THRUSH.

Turdus swainsoni, CAB. Tschudi, Fauna Peruana, 1844-46, 188. — SCLATER & SALVIN, Ibis, 1859, 6 (Guatemala). — SCLATER, P. Z. S. 1858, 451 (Ecuador); 1859, 326. — Ib. Catal. 1861, 2, no. 11. — BAIRD, Birds N. Am. 1858, 216; Rev. Am. B., 1864, 19. — GUNDLACH, Cab. Jour. 1861, 324 (Cuba). — Ib. Repert. 1865, 229. — PELZELS, Orn. Brazil, II. 1868, 92 (Marambitanas, Feb. and March). — LAWRE. N. Y. Lyc. IX, 91 (Costa Rica). — RIDGWAY. — MAYNARD. — SAMUELS, 152. — COOPER, Birds Cal. 6. — DALL & BANNISTER. *Turdus minor*, GMELIN, Syst. Nat. I, 1788, 809 (in part). *Turdus olivaceus*, GIRAUD, Birds L. Island, 1843-44, 92 (not of LINN.). (?) *Turdus minimus*, LAFRESNAYE, Rev. Zool. 1848, 5. — SCLATER, P. Z. S. 1854, 111. — BRYANT, Pr. Bost. Soc. VII, 1860, 226 (Bogota). — LAWRENCE, Ann. N. Y. Lyc. 1863. (Birds Panama, IV, no. 384.)

SP. CHAR. Upper parts uniform olivaceous, with a decided shade of green. The fore part of breast, the throat and chin, pale brownish-yellow; rest of lower parts white; the sides washed with brownish-olive. Sides of the throat and fore part of the breast with sub-rounded spots of well-defined brown, darker than the back; the rest of the breast (except medially) with rather less distinct spots that are more olivaceous. Tibiae yellowish-brown. Broad ring round the eye, loreal region, and a general tinge on the side of the head, clear reddish buff. Length, 7.00; wing, 4.15; tail, 3.10; tarsus, 1.10.

HAB. Eastern North America; westward to Humboldt Mountain and Upper Columbia; perhaps occasionally straggling as far as California; north to Slave Lake and Fort Yukon; south to Ecuador and Brazil. Cuba, GUNDLACH; Costa Rica, LAWRE.

Specimens examined from the northern regions (Great Slave Lake, Mackenzie River, and Yukon) to Guatemala; from Atlantic States to East Humboldt Mountains, Nevada, and from intervening localities. The extremes of variation are the *brownish-olive* of eastern and the clear *dark greenish-olive* of remote western specimens. There is no observable difference between a Guatemalan skin and one from Fort Bridger, Utah.

HABITS. The Olive-backed Thrush, or "Swamp Robin," has very nearly the same habitat during the breeding season as that of the kindred species with which it was so long confounded. Although Wilson seems to have found the nest and eggs among the high lands of Northern Georgia, it is yet a somewhat more northern species. It does not breed so far south as Massachusetts, or if so, the cases must be exceptional and very rare, nor even in Western Maine, where the "Ground Swamp Robin" (*T. pallasi*) is quite abundant. It only becomes common in the neighborhood of Calais.

It is, however, most widely distributed over nearly the entire continent, breeding from latitude 44° to high Arctic regions. It winters in Guatemala and southward as far as Ecuador and Brazil.

In its habits this thrush is noticeably different from the *T. pallasi*, being much more arboreal, frequenting thick woods; rarely seen, except during its migrations, in open ground, and seeking its food more among the branches of the trees.

Mr. Ridgway found this species very abundant among the Wahsatch Mountains, where it was one of the most characteristic summer birds of that region. It was breeding plentifully in the cañons, where its song could be heard almost continually. It inhabited an intermediate position between *T. auduboni* and *T. fuscescens*, delighting most in the shrubbery along the streams of the cañons and passes, leaving to the *T. auduboni* the secluded ravines of the pine regions higher up, and to the *T. fuscescens* the willow thickets of the river valleys. He did not meet with it farther west than the East Humboldt Mountains. The song, in his opinion, resembles that of the Wood Thrush (*T. mustelinus*) in modulations; but the notes want the power, while they possess a finer and more silvery tone.

The song of this species has a certain resemblance to that of *T. pallasi*, being yet quite distinct, and the differences readily recognized by a familiar ear. It is more prolonged; the notes are more equal and rise with more regularity and more gradually, are richer, and each note is more complete in itself. Its song of lamentation when robbed of its young is full of indescribable pathos and beauty, haunting one who has once heard it long after.

When driven from the nest, the female always flies to a short distance and conceals herself; making no complaints, and offering no resistance.

These birds, in a single instance, have been known to reach Eastern Massachusetts early in April, in an unusually early season, but they generally pass north a few weeks later. They make no prolonged stay, and are with us rarely more than three or four days. Their return in the fall appears to be, at times, by a more inland route. They are then not so numerous near the coast, but occasionally are abundant.

Their nests in Nova Scotia, wherever observed, were among the thick woods, on horizontal branches of a forest-tree, usually about five feet from the ground. Those observed in the Arctic regions by Mr. Kennicott were frequently not more than two feet from the ground.

The nests average about four inches in diameter and two in height, the cavity being three inches wide by about one and a half deep. They are more elaborately and neatly constructed than those of any other of our thrushes, except perhaps of *T. ustulatus*. Conspicuous among the materials are the *Hypnum* mosses, which by their dark fibrous masses give a very distinctive character to these nests, and distinguish them from all except those of the *T. ustulatus*, which they resemble. Besides these materials are found fine sedges, leaves, stems of equisetaceous plants, red glossy vegetable

fibres, the flowering stems of the *Cladonia* mosses, lichens, fine strips of bark, etc.

The eggs, which are four or five in number, exhibit noticeable variations in size, shape, and shades of coloring, bearing some resemblance to those of *T. ustulatus* and to the eggs asserted to be those of *T. nanus*, but are sufficiently distinct, and are still more so from those of *T. alicia*. They range in length from .83 to .94, with a mean of .88, their mean breadth is .66, the maximum .69, and the minimum .63. Their ground color is usually bluish-green, sometimes light blue with hardly a tinge of green, and the spots are of a yellowish-brown, or russet-brown, or a mixture of both colors, more or less confluent, with marked variations in this respect.

***Turdus swainsoni*, var. *ustulatus*, NUTTALL.**

OREGON THRUSH.

Turdus ustulatus, NUTTALL, Man. 1, 1840, 400 (Columbia River). — BAIRD, Birds N. Am. 1858, 215, pl. lxxxi, fig. 1. — IB. Rev. Am. B. 1864, 18. — COOPER & SUCKLEY, P. R. Rep. XII, II, 1860, 171. — RIDGWAY, Pr. A. N. S. Philad. 1869, 127. — DALL & BANNISTER, Tr. Chic. Acad. — COOPER, Birds Cal., 5.

SP. CHAR. General appearance of *fuscescens*, but with pattern of *swainsoni*; the buff orbital ring as conspicuous as in latter. The olive above is more *brown* than in this, and less yellowish than in *fuscescens*, becoming decidedly more rufescent on wings and less observably so on tail. Pectoral aspect different from *fuscescens*, the spots narrower and cuneate, sharply defined, and arranged in longitudinal series; in color they are a little darker than the crown. Length, 7.50; wing, 3.75; tail, 3.00; tarsus, 1.12.

HAB. Pacific Province of United States. Tres Marias Isl., Guatemala (winter). Mus. S. I.

This well-marked race is to be compared with *swainsoni*, not with *fuscescens*, as has generally been done; the latter, except in shade of colors, it scarcely resembles at all; still greater evidence that such is its affinity is that the *T. ustulatus* builds its nest on a tree, and lays a spotted egg, like *swainsoni*, while *fuscescens* nests on or near the ground, perhaps never in a tree, and lays a plain blue egg. The song of the present bird is also scarcely distinguishable from that of *swainsoni*. Upon the whole, we see no reason why this should not be considered as a Pacific Province form of the *Turdus swainsoni*; at least it becomes necessary to do so, after referring to *T. pallasi*, as geographical races, the *T. auduboni* and *T. nanus*.

HABITS. So far as we are aware, this thrush has a very limited distribution, being mainly restricted to the Pacific coast region from California to Alaska in the breeding season, though migrating southward in winter to Guatemala. Dr. Kennerly found it in great abundance breeding at Chilo-weyneck Depot, July 3, 1859. Dr. Cooper also found it one of the most abundant of the summer residents in Washington Territory, arriving there

in May and remaining until the beginning of September. Three specimens of this thrush were obtained at Sitka, by Mr. Bischoff. Mr. Ridgway met with only a single specimen east of the Sierra Nevada, though on that range he found it an abundant summer bird.

In its general appearance it has a marked resemblance to Wilson's Thrush (*T. fuscescens*), but its habits and notes, as well as its nest and eggs, clearly point its nearer affinity to Swainson's Thrush (*T. swainsoni*), its song being scarcely different from that of the latter species. Like this species, it frequents the thickets or brushwood along the mountain streams, and, except just after its arrival, it is not at all shy. In crossing the Sierra Nevada in July, 1867, Mr. Ridgway first met with this species. He describes it as an exquisite songster. At one of the camps, at an altitude of about 5,000 feet, they were found unusually plentiful. He speaks of their song as consisting of "ethereal warblings, — outbursts of wild melody." "Although its carols were heard everywhere in the depth of the ravine, scarcely one of the little musicians could be seen." "The song of this thrush," he adds, "though possessing all the wild, solemn melody of that of the Wood Thrush (*T. mustelinus*) is weaker, but of a much finer or more silvery tone, and more methodical delivery. It is much like that of the *T. swainsoni*, but in the qualities mentioned is even superior."

Dr Cooper found its nests with eggs about the middle of June. These were most usually built on a small horizontal branch, and were very strongly constructed of twigs, grasses, roots, and leaves, usually covered on the outside entirely with the bright green *Hypnum* mosses peculiar to that region, which in the damp climate near the coast continue to grow in that position, and form large masses. The number of eggs is usually five.

Dr. Cooper states that these thrushes sing most in the early morning and in the evening, when numbers may be heard answering one another on all sides. They do not affect the darkest thickets so much as the Hermit Thrush, but are often seen feeding in the gardens in the open sunshine.

Dr. Suckley, who found them quite abundant in the neighborhood of Fort Steilacoom, on the edge of the forest, and in swampy land, describes the song as a low, soft, sad, and lively whistle, confined to one note, and repeated at regular intervals. Mr. Nuttall, the first to describe this form, speaks of it as shy and retiring, and as in the habit of gathering insects from the ground. His ear, so quick to appreciate the characteristics of the songs of birds, which showed a close resemblance between the notes of this bird and that of Wilson's Thrush (*T. fuscescens*), enabled him to detect very distinct and easily recognizable differences. It is much more interrupted and is not so prolonged. The warble of this bird he describes as resembling *wit-wit t'villia*, and *wit-wit, t'villia-t'villia*. His call when surprised was *wit-wit*.

All the nests of this species that have fallen under my observation are large, compact, strongly constructed, and neat. They measure about 5 inches in their external diameter, with a depth externally of 3; the cavity

is comparatively shallow, being rarely 2 inches in depth. The external portions are constructed almost entirely of *Hypnum* mosses, matted together and sparingly interwoven with dry leaves and fine fibrous roots, and are lined with finer materials of the same kind. These nests most nearly resemble in their material and in their position those of Swainson's Thrush.

Mr. Hepburn found these birds very abundant about Victoria. It does not usually breed there before the last of May, though in one exceptional instance he found a nest with young birds on the 24th of that month.

The eggs vary in size and shape, ranging from .77 to .94 in length, and from .65 to .69 in breadth. They also vary in their ground color and in the tints of the spots and markings. The ground color is light green or light blue, and the markings are variously yellowish-brown and lilac, or dark brown and slate.

Mr. Grayson found this thrush very abundant in the month of January, in the thickest of the woods, in the islands of the Three Marias, on the Pacific coast of Mexico. They were very timid and shy, more so than any bird that he saw on those islands. It frequently uttered a low plaintive whistle, and seemed solitary in its habits.

***Turdus pallasi*, CABANIS.**

RUFIOUS-TAILED THRUSH; HERMIT THRUSH.

Turdus pallasi, CABANIS, Wiegmann's Archiv, 1847 (1), 205. — BAIRD, Birds N. Am. 1858, 212. — *Id.* Rev. Am. B. 1864, 14. — SCLATER, P. Z. S. 1859, 325 *ff.* — *Id.* Catal. 1861, 2, No. 7. — RIDGWAY. — MAYNARD. — SAMUELS, 148. *Turdus solitarius*, WILSON, Amer. Orn. V, 1812, 95 (not of LINNEUS). — SCLATER, P. Z. S. 1857, 212. *Turdus minor*, BON. Obs. Wilson, 1825, No. 72. *Turdus guttatus*, CABANIS, Tschudi, Fauna Peruana, 1844, 187 (not *Muscicapa guttata* of PALLAS).

Additional figures: *ARD. Birds Am.* III, pl. cxlvi. — *Id.* Orn. Biog. I, pl. lviii.

SP. CHAR. Tail slightly emarginate. Above light olive-brown, with a scarcely perceptible shade of reddish, passing, however, into decided rufous on the rump, upper tail-coverts, and tail, and to a less degree on the outer surface of the wings. Beneath white, with a scarcely appreciable shade of pale buff across the fore part of the breast, and sometimes on the throat; the sides of the throat and the fore part of the breast with rather sharply defined subtriangular spots of dark olive-brown; the sides of the breast with paler and less distinct spots of the same. Sides of the body under the wings of a paler shade than the back. A whitish ring round the eye; ear-coverts very obscurely streaked with paler. Length, 7.50 inches; wing, 3.84; tail, 3.25; tarsus, 1.16; No. 2,092.

HAB. Eastern North America. Mexico? Not found in Cuba. *vide* GUNDELACH.

In spring the olive above is very much that of eastern specimens of *swainsoni*; in winter specimens it is much browner, and almost as much so as in *fuscescens*. Young birds have the feathers of the head, back, and wing coverts streaked centrally with drop-shaped spots of rusty yellowish

HABITS. Until quite recently the "Ground Swamp Robin," or Hermit

Thrush, has not been distinguished from the closely allied species *T. swainsoni*, and all accounts of writers have blended both in singular confusion. My colleague, Professor Baird, in the summer of 1844, was the first to suggest the distinctness of the two species. By the common people of Maine and the British Provinces this difference has long been generally recognized, this species being known as the "Ground Swamp Robin," and the other as the "Swamp Robin."

The present species is found throughout Eastern North America to the Mississippi, and breeds from Massachusetts to high arctic regions. It is only occasionally found breeding so far south as Massachusetts; through which State it passes in its spring migrations, sometimes as early as the 10th of April; usually reaching Calais, Maine, by the 15th of the same month.

It is a very abundant bird throughout Maine, where it begins to breed during the last week of May, and where it also probably has two broods in a season.

The greater number appear to pass the winter in the Southern States; it being common in Florida, and even occasionally seen during that season as far north as latitude 38° in Southern Illinois, according to Mr. Ridgway.

It rarely, if ever, sings during its migrations; appears in small straggling companies, frequents both thickets and open fields, and is unsuspicious and easily approached.

The song of this species is very fine, having many of the characteristics of that of the Wood Thrush (*T. mustelinus*). It is as sweet, has the same tinkling sounds, as of a bell, but is neither so powerful nor so prolonged, and rises more rapidly in its intonations. It begins with low, sweet notes, and ends abruptly with its highest, sharp ringing notes.

Taken from the nest they are easily tamed, and are quite lively and playful; but their want of cleanliness renders them very undesirable pets. When their nest is visited they make no complaints, but retire to a distance. Not so, however, when their natural enemy, the hawk, appears; these they at once assail and seek to drive away, uttering loud and clear chirps, and peculiar twittering sounds.

The nest of this thrush is always built on the ground, most generally either under low bushes or in the open ground, rarely, if ever, among thick trees, and for the most part in low swampy places. Both nest and eggs closely resemble those of Wilson's Thrush (*T. fuscescens*). In Parsboro, Nova Scotia, I found one of the nests built in the very midst of the village, close to a dwelling, though on a spot so marshy as to be almost unapproachable. The nests are 3 inches in height and 5 in diameter, with a cavity $3\frac{1}{4}$ inches wide by $1\frac{3}{4}$ deep. They are composed of decayed deciduous leaves, remnants of dried plants, sedges and grasses, intermingled with twigs, and lined with finer grasses, sedges, and strips of bark.

The eggs are of a uniform bluish-green color, and range in length from .88 to .94, with an average of .63 of an inch.

Turdus pallasi, var. nanus, AUDUBON.**DWARF HERMIT THRUSH.**

Turdus nanus, AUD. Orn. Biog. V, 1839, 201, pl. cci. — BAIRD, Birds N. A. 1858, 213; Rev. Am. B. 1864, 15. — SCLATER, P. Z. S. 1859. — Ib. Catal. 1861. — DALL & BANNISTER. — COOPER, Birds Cal., p. 4. *Turdus pallasi*, var. *nanus*, RIDGWAY, Rep. Kings Exped. V, 1872. ? *Turdus amaluschkae*, GMELIN, S. N. I, 1788, 808. ?? *Muscicapa guttata*, PALLAS, Zoog. Rosso-Asiat. II, 1811, 465.

SP. CHAR. Above with the clear dark olive of *swainsoni*, but this even purer and more plumbeous. Upper tail-coverts (but not lower part of rump) becoming more rufous, the tail abruptly darker, richer, and more purplish-rufous, approaching to chestnut. The clear olive of the neck passes into brownish-plumbeous along sides; pectoral spots more sparse and less pure black than in *T. pallasi*. The white beneath is of an almost snowy purity, appreciably different from the cottony-white of *T. pallasi*. Wing, 3.30; tail, 3.00; bill, .36; tarsus, 1.07.

A very tangible and constant character possessed by this bird is the more slender and depressed bill, as compared with that of *T. pallasi*. Specimens vary only in intensity of colors; these variations very limited, and corresponding with those of *T. pallasi*. In all cases, however, their precise pattern and peculiar distribution is retained.

HAB. Western Province of North America, eastward from Kodiak to Cape St. Lucas, Arizona, CORES.

HABITS. This small race of the Hermit Thrush was first noticed by Dr. Pickering, and described by Mr. Audubon from an imperfect skin. It has since been obtained abundantly on the Pacific slope, and Mr. Ridgway procured a specimen as far east as the East Humboldt Mountains, which he considers its eastern limit.

In its habits it is said to be, like *T. pallasi*, almost exclusively terrestrial. Dr. Heermann mentions finding it abundant in California, and breeding among the stunted oaks covering the sand-hills of San Francisco. Dr. Coues found it in Arizona, but speaks of it as rare and migratory, occurring chiefly in spring and autumn, and as a shy and retiring species. Dr. Cooper, in his Report on the Birds of California, describes it as shy and timid, preferring dark and shady thickets, feeding chiefly on the ground, running rapidly, and searching for insects among the leaves.

Near San Diego they began to sing about the 25th of April. The song, consisting of a few low ringing notes, resembles that of Wilson's Thrush (*T. fuscescens*), and also that of *T. ustulatus*, but is not so loud. Their note of alarm is a loud and ringing chirp, repeated and answered by others at a long distance.

At Santa Cruz, on the first of June, Dr. Cooper met with several of their nests, which, though probably erroneously, he supposed to belong to the Dwarf Hermit Thrush. They were all built in thickets under the shade of cottonwood-trees. Each nest was about five feet from the ground, and all contained eggs, from two to four in number, in differing stages of incubation. The nests were built of dry leaves, roots, fibres, grasses, and bark,

without any mud, and were lined with decayed leaves. Their height and external diameter measured 4 inches. The diameter of the cavity was $2\frac{1}{2}$ inches and the depth $2\frac{1}{4}$. The eggs measured .90 by .70 of an inch. They are of a pale bluish-green, speckled with cinnamon-brown, chiefly at the larger end.

The nest, supposed to be of this species, supplied by Dr. Cooper, is large for the bird; constructed of a base loosely made up of mosses, lichens, and coarse fibres of plants. It is a strong and compact structure of matted leaves, put together when in a moist and decaying condition; with these there are interwoven roots, twigs, and strong fibres, surrounding the nest with a stout band and strengthening the rim. In fact, it corresponds so well—as do the eggs also—with those of *T. ustulatus*, that it is extremely probable that they really belong to that species. The only observable difference is the absence of the *Hypnum* mosses characteristic of northern *ustulatus*.

Dall and Bannister mention in their list of Alaska birds that the species is not common there. It was also taken at Sitka and Kodiak by Bischoff.

The fact that this thrush builds its nest above the ground, and lays spotted eggs, if verified, would at once warrant our giving it independent rank as a species, instead of considering it as a local race of *pallasi*.

***Turdus pallasi*, var. *auduboni*, BAIRD.**

ROCKY MOUNTAIN HERMIT THRUSH.

Turdus auduboni, BAIRD, Rev. Am. Birds, 1864, 16. — RIDGWAY, P. A. N. S. 1869, 129. — ELLIOT, Illust. (fig.). *Merula silens*, SWAINSON, Philos. Mag. I, 1827, 369 (not *Turdus silens* of VIEILLOT, Encycl. Méth. II, 1823, 647, based on *T. mustelinus*, WILS. = *T. fuscescens*). — IB. Fauna Bor.-Amer. II, 1831, 186. — BAIRD, Birds N. Amer. 1858, 213, and 922. — SCLATER, P. Z. S. 1858, 325 (La Parada), and 1859, 325 (Oaxaca). — IB. Catal. Am. Birds, 1861, 2, no. 9.

SP. CHAR. Colors much as in *Turdus nanus*, but the upper tail-coverts scarcely different from the back. Tail yellowish-rufous. Length of wing, 4.18; tail, 3.60; bill from nostril, .45; tarsus, 1.26.

HAB. Rocky Mountains, from Fort Bridger south into Mexico. Orizaba (Alpine regions), SEMICHRIST.

This is a very distinct race of thrushes, although it may be questioned whether it be truly a species. It is, however, sufficiently distinct from the eastern and western Hermit Thrushes to warrant our giving it a place of some kind in the systems.

The young plumage differs from that of *pallasi* as do the adults of the two, and in about the same way. The olive is very much purer, with a greenish instead of a brownish cast, and the tail is very much lighter, inclining to dull ochraceous instead of rufous; this yellowish instead of rufous cast is apparent on the wings also. The yellowish "drops" on head, back, etc., are very much narrower than in *pallasi*, while the greater coverts, instead of being distinctly tipped with yellowish, merely just perceptibly fade in color at tips.

HABITS. At present we have but little knowledge of the habits of this form of *T. pullasi*, and no information whatever regarding its nesting or eggs.

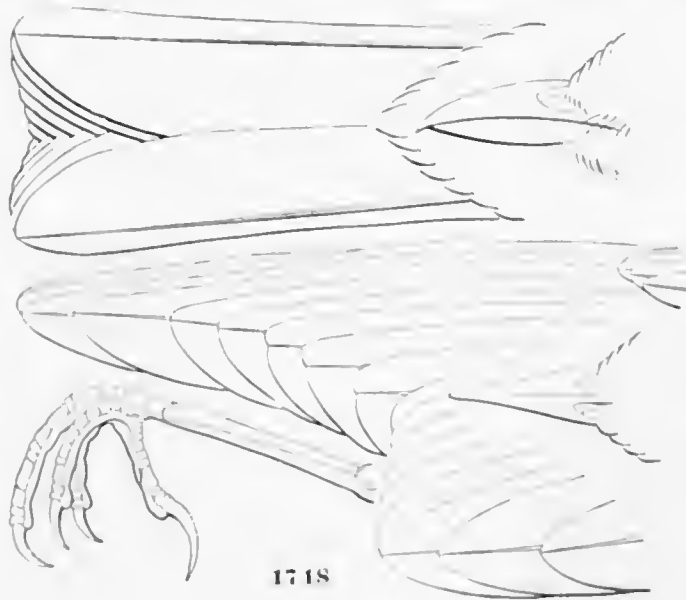
In its distribution it is confined to the central range of mountains from Fort Bridger to Southern Mexico. This species, there known as "Solitario," is common in the Alpine region of Vera Cruz (as well as in all the elevated regions of Central Mexico), frequenting the pine woods in the district of Orizaba. Mr. Sumichrast obtained it at all seasons of the year at Moyoapam, in that vicinity; a locality the height of which approximates 2,500 metres. It is also found at a height of 1,200 metres, near the city of Orizaba.

Mr. Ridgway calls this bird the "Rocky Mountain Hermit Thrush." He states that he found it common in the Wahsatch Mountains, but that, on account of its retiring habits, it was seldom seen. It there lives chiefly in the deep ravines in the pine region, exhibiting an attachment to these solitudes rather than to the thickets along the watercourses lower down; the latter it leaves to the *T. swainsoni*. Owing to the reserved manners of this bird, as well as to the great difficulty of reaching its abode, there were few opportunities presented for learning much concerning its habits, nor did he hear its song. In its flight the pale ochraceous band across the bases of its quills was a very conspicuous feature in the appearance of its species, leading Mr. Ridgway to mistake it at first for the *Myiadestes townsendii*,—also an inhabitant of the same localities,—so much did it look like that bird, which it further resembled in its noiseless, gliding flight.

SUBGENUS **TURDUS**, LINN.

Of *Turdus*, in its most restricted sense, we have no purely American representatives, although it belongs to the fauna of the New World in consequence of one species occurring in Greenland, that meeting-ground of the birds of America and Europe; which, however, we include in the present work, as related much more closely to the former.

This Greenland species, *Turdus iliacus*, is closely related to *T. viscivorus*, the type of the genus, and comes much closer to the



1718

Turdus iliacus.

American Robins (*Planesticus*) than to the Wood Thrushes (*Hylocichla*).

Turdus iliacus, LINN.**REDWING THRUSH.**

Turdus iliacus, LINN. Syst. Nat. 10th ed. 1758, 168, and of European authors. — REINHARDT, Ibis, 1861, 6 (Greenland). BAIRD, Rev. Am. B. 1864, 23 (Greenland).

SP. CHAR. This species is smaller than our Robin (*T. migratorius*), but of a similar grayish-olive above, including the head. The under parts are white: the feathers of the lower throat and breast streaked with brown. The sides, axillars, and inner wing-covert are reddish-cinnamon. A conspicuous white streak over the eye and extending as far back as the nape. Bill black, yellow at base of lower jaw. Legs pale-colored. Second quill longer than fifth. Length, about 8.25; wing, 4.64; tail, 3.45; bill, from gape, 1.07; from nostril, .44; tarsus, 1.16; middle toe and claw, 1.15. Specimen described: 18,718, ♂, a British specimen received from the Royal Artillery Institution, Woolwich.

HAB. Greenland, in the New World.

The occurrence of this well-known European species in Greenland brings it within the limits of the American Fauna. Two Greenland specimens are recorded by Dr. Reinhardt: one of them shot at Fredericksaab, October 20, 1845.

HABITS. The Redwing can probably only claim a place in the fauna of North America as an occasional visitant. Of the two specimens observed in Greenland, one was shot late in October. It is not known to breed there.

This species, during its breeding season, is found only in the more northern portions of Europe; only occasionally, and very rarely, breeding so far south as England. It makes its appearance in that kingdom on its southern migrations, coming in large flocks from Northern and Northeastern Europe, and arriving usually before the end of October. During their stay in England they frequent parks and pleasure-grounds that are ornamented with clumps of trees. During mild and open weather they seek their subsistence in pasture lands and moist meadows, feeding principally on worms and snails. In severe winters, when the ground is closed by frost or covered by snow, the Redwings are among the first birds to suffer, and often perish in large numbers.

During the winter they extend their migrations to the more southern portions of Europe, to Sicily, Malta, and even to Smyrna. In early spring they return to the more central portions of the continent, and leave in May for their more northern places of resort.

They nest in trees in the moist woods of Norway and Sweden. Their nests resemble those of the common Fieldfare, *T. pilaris*. The outside is composed of sticks, weeds, and coarse grass, gathered wet, and matted with a small quantity of moist clay. They are lined with a thick bed of fine grass.

The Redwing is said to possess a delightful note, and is called the Nightingale of Norway. Linnaeus, speaking of this bird, claims that its high and varied notes rival even those of that far-famed vocalist.

During the summer the Redwing advances to the extreme north, visiting

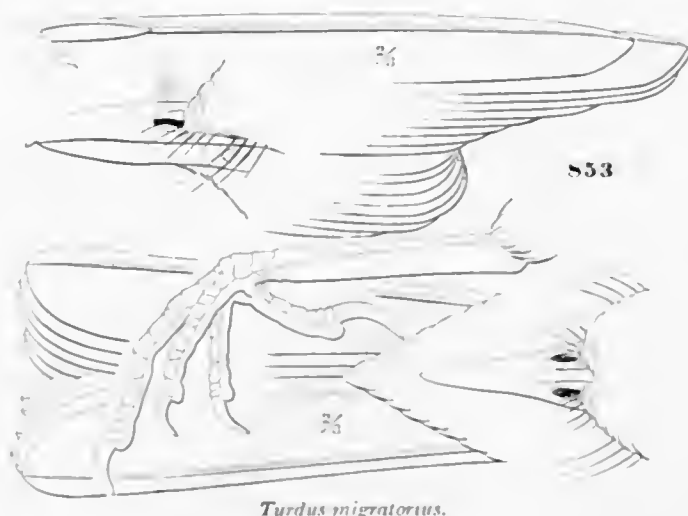
the Faroe Islands, Iceland, and Northern Russia. The general character of its food, its inability to feed exclusively on berries, and the fact that it perishes from starvation in severe winters, would seem to prove that its occurrence in Greenland so late as October must have been purely accidental. It is not probable that its presence in North America will be found to be a common event.

The eggs measure 1.06 inches in length by .81 in breadth. The ground color is a light green with a bluish tinge thickly covered with russet or reddish-brown spots, confluent at the larger end.

SUBGENUS **PLANESTICUS**, BONAP.

Planesticus, BONAP. Comptes Rendus, 1854. (Type *Turdus jamaicensis*, GMELIN.)

This section of the Thrushes is well represented in America, especially in its middle and southern portions, and its members have a close resemblance



to the typical European species in the full form, stout legs, etc., as already stated. The spots on the throat, and their absence elsewhere on the under part of the body, are sufficient to distinguish them.

Of the two North American species one is the well-known Robin, the other a closely related form from Cape St. Lucas, which indeed is probably

only a local race or variety, although nothing exactly like it has yet been found away from Lower California. The following diagnosis may serve to distinguish the two birds: —

COMMON CHARACTERS. Throat white with dark streaks. Rest of under parts, including lining of wing, reddish or ochraceous; the anal region whitish; lower eyelid white. Nest on trees. Eggs plain blue.

Above slaty-olive, approaching to black on the head. Beneath rufous-chestnut. Spot in lore and on upper eyelid of white. Tail, 4.25. *Hab.* Whole of North America; Mexico, south to Oaxaca and Cordova; Cuba (very rare) and Tobago, of West Indies var. *migratorius*.

Above dull grayish-ash, not darker on the head. Beneath pale yellowish-buff; tinged with ashy across breast; a continuous white stripe from the lores over and a quarter of an inch behind the eye. More white on belly and flanks than in *T. migratorius*. Bill stouter; tail only 3.75, while the wing is the same. *Hab.* Cape St. Lucas, Lower California var. *confinis*.

Turdus migratorius, var. migratorius, LINN.**ROBIN; AMERICAN REDBREAST.**

Turdus migratorius, LINN. S. N. 12th ed. 1766, 292. — SCLATER, P. Z. S. 1856, 294; 1859, 331; 1864, 172. — IB. Catal. Am. Birds, 1861, 4. — SCLATER & SALVIN, Ibis, 1860, 396 (Coban). — BAIRD, Birds N. Am. 1858, 218; Rev. Am. B. 1864, 28. — COOPER & SUCKLEY, P. R. R. R. XII, II, 1859, 172. — DRESSER, Ibis, 1865, 475. (Texas, winter). — COUES, Pt. A. N. S. 1866, 64 (Arizona). — DALL & BANNISTER (Alaska). — COOPER, Birds Cal. — SAMUELS, 154.

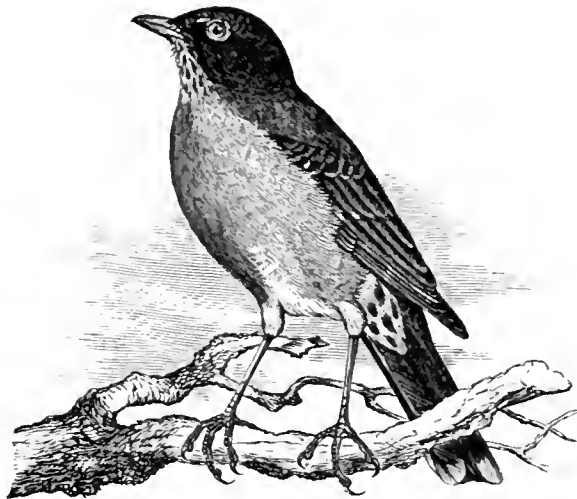
Figures: VIEILLIOT, Ois. Am. Sept. II, pl. lx, lxi. — WILSON, Am. Orn. I, 1808, pl. ii. — DOUGHTY, Cab. N. H. I, 1830, pl. xii. — AUDUBON, Birds Am. III, pl. cxlii; Orn. Biog. II, pl. cxxxi.

SP. CHAR. Tail slightly rounded. Above olive-gray; top and sides of the head black. Chin and throat white, streaked with black. Eyelids, and a spot above the eye anteriorly, white. Under parts and inside of the wings, chestnut-brown. The under tail-coverts and anal region, with tibiae, white, showing the plumbeous inner portions of the feathers. Wings dark brown, the feathers all edged more or less with pale ash. Tail still darker, the extreme feathers tipped with white. Bill yellow, dusky along the ridge and at the tip. Length, 9.75; wing, 5.43; tail, 4.75; tarsus, 1.25.

HAB. The whole of North America; Mexico, Oaxaca, and Cordova; Guatemala; Cuba, very rare, GUNDLACH; Tobago, KIRK; Bermuda, JONES; Orizaba (Alpine regions, breeding abundantly), SUMICHRIST.

Young birds have transverse blackish bars on the back, and blackish spots beneath. The shafts of the lesser coverts are streaked with brownish-yellow; the back feathers with white.

There are some variations, both of color and proportions, between eastern and western specimens of the Robin. In the latter there is a tendency to a longer tail, though the difference is not marked; and, as a rule, they slightly exceed eastern specimens in size. The broad white tip to the lateral tail-feather — so conspicuous a mark of eastern birds — is scarcely to be found at all in any western ones; and in the latter the black of the head is very sharply defined against the



Turdus migratorius.

lighter, clearer ash of the back, there hardly ever being a tendency in it to continue backward in the form of central spots to the feathers, as is almost constantly seen in eastern examples; of western specimens, the rufous, too, is appreciably lighter than in eastern. As regards the streaks on the throat, the black or the white may either largely predominate in specimens from one locality.

In autumn and winter each rufous feather beneath is bordered by a more or less conspicuous crescent of white; in addition to this, most of the lighter individuals (♀?), at this season, have an ashy suffusion over the breast and flanks; and this, we have observed, is more general and more noticeable in western than in eastern specimens. In fall and winter the color of the bill, too, changes, becoming at this season either partially or wholly dusky, instead of almost entirely yellow, as seen in spring and summer examples.

Mexican specimens, found breeding in the Alpine regions as far south as Orizaba and Mirador, most resemble the western series; one, however (No. 38,120♂, Orizaba), but in the autumnal plumage, and therefore very possibly a migrant from the North, is hardly distinguishable from No. 32,206, Georgia; it is about identical in proportions, and the rufous is of a castaneous shade, like the deepest colored eastern examples; the white tip to the outer tail-feather is as broad and conspicuous as is ever seen in the latter.

HABITS. Scarcely any American bird has a wider range of geographical distribution, or is more numerous wherever found, than this thrush. From Greenland on the extreme northeast to the plateau of Mexico, and from the Atlantic to the Pacific, the Robin is everywhere a very abundant species. Single specimens have been obtained as far south as Coban, Guatemala. Its distribution in the breeding season is hardly less restricted, occurring alike on the shores of the Arctic Seas and on the high lands of Vera Cruz. In the winter months it is most abundant in the Southern States, while in the Middle and even the Northern States, in favorable localities, it may be found throughout the year; its migrations being influenced more by the question of food than of climate. In the valleys among the White Mountains, where snow covers the ground from October to June, and where the cold reaches the freezing-point of mercury, flocks of the Robin remain during the entire winter, attracted by the abundance of berries.

On the Pacific Coast the Robin is only a winter visitant in California; a very few remaining to breed, and those only among the hills. They reach Vancouver Island early in March, and are very abundant.

In New England, where the Robins are held in great esteem, and where they exist under very favorable circumstances, their numbers have very largely increased, especially in the villages. They cause not a little annoyance to fruit cultivators by their depredations upon the productions of the garden, especially cherries and strawberries. They are a voracious bird, and no doubt destroy a large quantity of small fruit, but there is abundant evidence that this is more than compensated by their destruction of the most injurious insects, upon which they wage an incessant war. The investigations of Mr. J. W. P. Jenks and Professor Treadwell establish conclusively their great services in this direction.

The experiments of the latter gentleman show that the nestlings of the Robin require a vast amount of animal food, forty per cent more than their

own weight being consumed by the young bird within twenty-four hours, and, what is more, demonstrated to be necessary to its existence.

In Massachusetts a few Robins remain throughout the year, but the greater proportion leave early in November, returning late in February or early in March.

The song of the Robin is deservedly popular. While many of our birds possess far superior powers of melody, and exhibit a much greater variety in their song, there are none that exceed it in its duration or extent. It is the first bird in spring to open and one of the last to close the great concert of Nature. Their song is earnest, simple, and thrilling, and is said by Audubon to resemble that of the European Blackbird, *Turdus merula*.

The Robin, when taken young, may be readily tamed, and soon becomes contented and accustomed to confinement. They are devoted to their young, watchful, attentive, and provident. They begin to construct their nest in early spring before the trees put forth their leaves, and often in very exposed positions. The size of the nest, in fact, makes concealment impossible. These nests are sometimes placed in quite remarkable positions, such as the beams of a ship partly finished, and where the carpenters were every day at work, and similar situations indicating a great familiarity. Their favorite place is the horizontal branch of an apple-tree, about ten feet from the ground.

The nest of the Robin is a large and coarsely constructed combination of rude materials. It is composed of a base of straw, leaves, mosses, stems, and dry grasses, upon which a cup-shaped fabric of clay or mud is built. The whole is lined with finer dry grasses and vegetable fibres. They average 5 inches in height and the same in diameter. Their cavity is $2\frac{3}{4}$ inches deep, with a diameter of $2\frac{1}{2}$ inches.

The eggs of the Robin, which are usually five and sometimes six in number, are of a uniform bright greenish-blue color, liable to fade when exposed to light, but when fresh exhibiting a very distinct and bright tint. They vary in size from 1.25 to 1.12 inches in length, and in breadth from .88 to .75 of an inch. Their mean measurement is 1.18 by .81.

***Turdus migratorius*, var. *confinis*, BAIRD.**

CAPE ST. LUCAS ROBIN.

Turdus confinis, BAIRD, Rev. Am. B. 1864, 29. — ELLIOT, Birds America. — COOPER, Birds Cal., 9.

SP. CHAR. No. 23,789. Entire upper parts and sides of head and neck uniform grayish-ash, with perhaps a faint tinge of olivaceous, less than in eastern specimens of *T. migratorius*. The central portions of the feathers of the top of head are rather darker than the edges, though almost inappreciably so, and not imparting a general dusky appearance. The chin and throat are white, streaked with ashy-brown. The jugulum and breast are

pale yellowish-buff; the axillars, inner wing-coverts, and sides of the breast similarly, but rather more decidedly colored. The belly and edges of the crissal feathers are white, the hinder parts of the flanks ashy. There is a distinct whitish stripe from the lores over and a quarter of an inch behind the eye; the lower eyelid is also white. The tail-feathers are worn, but there is an indication of a narrow white tip. The feathers of the jugulum, especially of the sides, are tipped with ashy like the back, as in immature specimens of *T. migratorius*. The greater wing-coverts are tipped with dull white. The bill is yellowish; the upper mandible and the tip of lower tinged with dusky. The feet are pale brown.

The length cannot be given accurately, as the skin is much drawn up. The wing, however, measures 5.10 inches, its tip reaching 1.40 beyond the longest secondary; tail, 4.10; tarsus, 1.20; middle toe and claw, 1.07; exposed portion of culmen, .92; from tip to open portion of nostrils, .60.

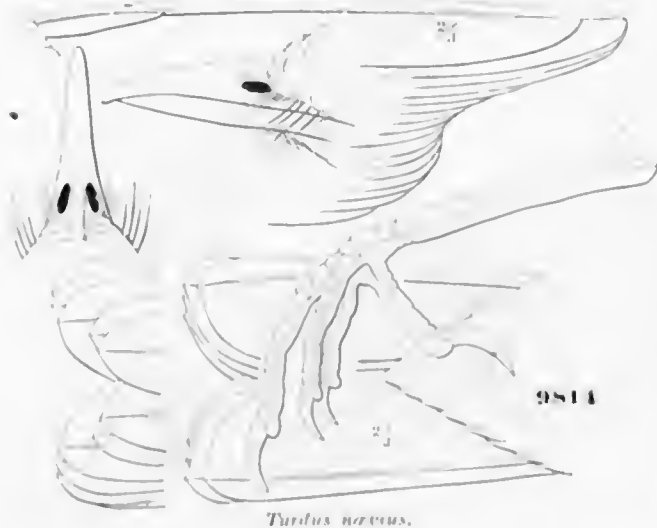
HAB. Todos Santos, Cape St. Lucas.

The specimen with a general resemblance to an immature *T. migratorius* (especially the western variety) in the white superciliary streak and general markings, is much lighter beneath than in any of the many skins of *T. migratorius* examined; there being none of the dark chestnut or cinnamon shade, but rather a light buff; the belly and flanks are much more purely white. The superciliary stripe extends farther behind the eye; indeed, in most specimens of *migratorius* the white is nearly confined to the eyelids. The bill and wings are rather longer than usual in *migratorius*; the middle toe, on the other hand, appears shorter. Nothing is on record in regard to the habits of this bird.

SUBGENUS **HESPEROCICHLA**, BAIRD.

Hesperocichla, BAIRD, Rev. Am. Birds, 1, 1864, 12. (Type *Turdus naevius*, GM.)

The single species of this subgenus differs in form from the Robins (*Planesticus*), in the more awl-



shaped bill, the curved commissure, and the absence of a notch at the end; the longer, slenderer, and straighter claws; and in the dissimilarity in color of the sexes. In the latter respects it agrees with *Merula* of Europe and Middle America; in which, however, the bill is distinctly notched, and less attenuated. The tail is shorter and broader than in

Planesticus, more as in true *Turdus* or *Hylorichla*.

Turdus nævius, GMEL.**OREGON ROBIN; VARIED THRUSH.**

Turdus nævius, GM. S. N. I, 1788, 817. — SCLATER, P. Z. S. 1857, 4; 1859, 331. — BAIRD, Birds N. Am. 1858, 219; Rev. Am. B. 1864, 32. — COOPER & SUCKLEY, P. R. R. R. XII, II, 1859, 172. — COUES, Pr. A. N. S. 1866, 65. (Quotes occurrence on Colorado River, above Fort Mohave, as exceptional.) — MAYNARD (Massachusetts!). — TURNBULL (N. Jersey!). — DALL & BANNISTER (Alaska). — COOPER, Birds Cal. 10. *Orpheus meruloides*, RICH. F. B. A. II, 1831, 187, pl. xxxviii.

Other figures: VIEILLOT, Ois. Am. Sept. II, 1807, pl. lxvi. — AUD. Orn. Biog. IV, 1838, pl. cccxix, and cccxxxiii. — IB. Birds Am. III, pl. cxliii.

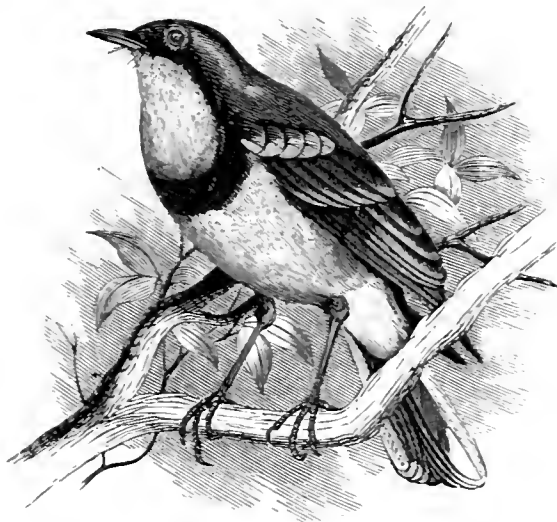
SP. CHAR. Tail nearly even; the lateral feather shorter. Above, rather dark bluish slate; under parts generally, a patch on the upper eyelids continuous with a stripe behind it along the side of the head and neck, the lower eyelids, two bands across the wing coverts and the edges of the quills, in part, rufous orange-brown; middle of belly white. Sides of the head and neck, continuous with a broad pectoral transverse band, black. Most of tail feathers with a terminal patch of brownish white. Bill black. Feet yellow. Female more olivaceous above; the white of the abdomen more extended; the brown beneath paler; the pectoral band obsolete. Length, 9.75 inches; wing, 5.00; tail, 3.90; tarsus, 1.25.

Young (45.897. Sitka, Aug. 1866: F. Bischoff) Exactly resembling the adult female, having no spots other than seen in the adult plumage; but the pectoral collar is composed only of badly defined blackish transverse crescents, and the upper parts anterior to the rump are of an umber brown tint. The markings about the head and on the wings are precisely as in the adult.

This species does not appear to be liable to any noticeable variation.

HAB. West coast of North America, from Behring Straits to California; straggling to Great Bear Lake. Accidental on Long Island (Cab. G. N. Lawrence), New Jersey (Cab. Dr. Samuel Cabot), and Ipswich, Mass. (Cab. Boston Society Natural History); Iowa (ALLEN).

HABITS. The accidental occurrence of a few specimens of this well-marked bird in the Eastern States is its only claim to a place in that fauna, it being strictly a western species, belonging to the Pacific Coast. It was first discovered by the naturalists of Captain Cook's expedition, who met with it as far to the north as Nootka Sound. It is only very recently that we have become possessed of reliable information in regard to its breeding and its nest and eggs. Sir John Richardson was informed that it nested in bushes in a manner similar to that of the common robin.



Turdus nævius.

Nuttall and Townsend found it abundant among the western slopes of the

Rocky Mountains, near the Columbia River, in October. In the winter it became still more numerous, passing the season in that region as well as in more southern localities, associating with the robin. From this bird it may be readily distinguished by the difference of its notes, which are louder, sharper, and delivered with greater rapidity. In the spring, before leaving for their breeding-places, they are described as having a very sweet warble.

On the Columbia River they were not resident, arriving there in October, continuing throughout the winter, and leaving early in May. During their stay they moved through the forest in small flocks, frequenting low trees, and for the most part keeping perfect silence. They were timorous and difficult of approach.

Its habits are said to resemble those of the robin, but in some of them the descriptions given appear to correspond more with those of the Fieldfares and Redwings of Europe. Like those species it is a summer resident of high northern latitudes, affects secluded forests and thickets bordering upon streams, and is found only in unfrequented localities.

Dr. Cooper was of the opinion that a few of these thrushes remained in Washington Territory throughout the summer, as he frequently met with them in the dark spruce forests of that region as late as June and July. He describes the song as consisting of five or six notes in a minor key, and in a scale regularly descending. It was heard continually throughout the summer, among the tops of the trees, but only in the densest forests. Dr. Suckley states that after a fall of snow they would be found along the sandy beaches near the salt water, where they were both abundant and tame. We are indebted to Mr. W. H. Dall for our first authentic knowledge of its nest and eggs. The former measures 6 inches in diameter with a depth of $2\frac{1}{2}$ inches. It has but a very slight depression, apparently not more than half an inch in depth. The original shape of the nest had, however, been somewhat flattened in transportation. The materials of which it was composed were fine dry mosses and lichens impacted together, intermingled with fragments of dry stems of grasses.

A nest of this thrush obtained by Dr. Minor, in Alaska, is a much more finished structure. Its base and periphery are composed of an elaborate basket-work of slender twigs. Within these is an inner nest consisting of an interweaving of fine dry grasses and long gray lichens.

The eggs in size, shape, ground color, and markings are not distinguishable from those of the *Turdus musicus* of Europe. They measure 1.13 inches in length by .80 in breadth, are of a light blue with a greenish shading, almost exactly similar to the ground color of the *T. migratorius*. They are very distinctly marked and spotted with a dark umber-brown approaching almost to blackness.

Mr. Dall informs us that the nest found by him was built in a willow bush, about two feet from the ground, and on the top of a large mass of rubbish lodged there by some previous inundation. Other nests of the

same species were met with in several places between Fort Yukon and Nulato, always on or near a river-bank and in low and secluded localities.

They arrive at Nulato about May 15, and prefer the vicinity of water, frequenting the banks of small streams in retired places. Mr. Dall states that he has seen the male bird on a prostrate log near the nest, singing with all his might, suddenly cease and run up and down the log for a few minutes, strutting in a singular manner, then stopping and singing again; and keeping up this curious performance. Specimens were received from Sitka, Kodiak, Cook's Inlet and Admiralty Islands.

SUBFAMILY MIMINÆ.

Birds of this section have a somewhat thrush-like appearance, but (except in *Oreoscoptes*) with longer, much more graduated, and broader tail; short concave wings, about equal to or shorter than the tail, usually lengthened, sometimes decurved bill without notch, and strongly marked scutellæ on the anterior face of the tarsus. The loreal feathers are soft, and not ending in bristly points. The colors are dull shades of brown, gray, or plumbeous. Most of the species, in addition to a melodious native song, possess the power of imitating the notes of other birds; sometimes, as in the American Mocking Bird, to an eminent degree. All are peculiar to the New World, and the species are much less vagrant than those of the *Turdinæ*,—those of the United States scarcely going beyond its northern boundary; others, again, restricted to small islands in the West Indies or in the Pacific Ocean.

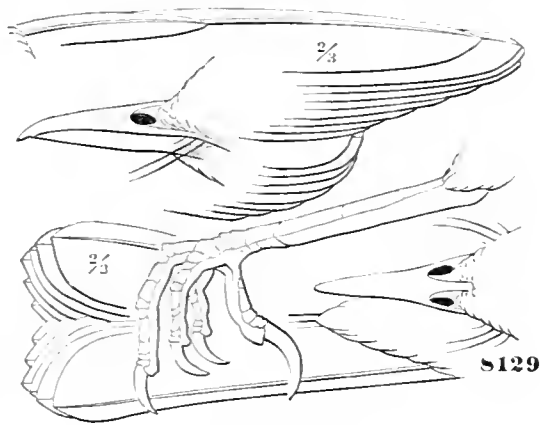
GENUS OREOSCOPTES, BAIRD.

Oreoscoptes, BAIRD, Birds N. Am. 1858, 346. (Type *Orpheus montanus*, TOWNS.)

Oreoscoptes, BAIRD, Rev. Am. Birds, 42.

SP. CHAR. Bill shorter than the head, without distinct notch. Bristles prominent, their tips reaching beyond the nostrils. Wings pointed, equal to, or a little longer than the tail. First quill not half the second, about two fifths the longest; third, fourth, and fifth quills equal and longest; second between sixth and seventh. Tail but slightly graduated; the feathers narrow. Tarsus longer than middle toe and claw by an additional claw; scutellæ distinct anteriorly.

Of this genus only one species is at present known. This belongs to the Middle and Western provinces of the United States and extends from the Pacific coast eastward to Fort Laramie and the Black Hills (in winter to San Antonio, Texas); south to Fort Yuma and Cape St. Lucas.



Oreoscoptes montanus.

Oreoscoptes montanus, BAIRD.**SAGE THRASHER; MOUNTAIN MOCKER.**

Orpheus montanus, TOWNSEND, Jour. Acad. Nat. Sci. Phila. VII, 11, 1837, 192. — AUD. Birds Amer. II, 1841, 194, pl. exxxix. *Turdus montanus*, AUD. Orn. Biog. IV, 1838, 437, pl. cccxix, fig. 1. *Mimus montanus*, BONAP. Consp. 1850, 276. *Oreoscoptes montanus*, BAIRD, Birds N. Amer. 1858, 347; Rev. Am. B. 1864, 42. — SCLATER, P. Z. S. 1859, 340. — IB. Catal. 1861, 8, no. 30. — COOPER, Birds Cal. I, 12.

SP. CHAR. First quill rather shorter than the sixth. Tail slightly graduated. Above brownish-ash; each feather obsoletely darker in the centre. Beneath dull white, thickly marked with triangular spots, except on the under tail-coverts and around the anus, which regions are tinged with yellowish-brown. Wing-coverts and quills edged with dull white. Tail feathers brown; the outer edged, and all (except, perhaps, the middle) tipped with white. Length, 8 inches; wing, 4.85; tail, 4.00; tarsus, 1.21.

Young. Similar, but spots beneath less sharply defined, and the upper parts quite conspicuously streaked with dusky.

HAB. Rocky Mountains of United States, west to Pacific, south to Cape St. Lucas.

The careful observations of Mr. Robert Ridgway have led him to the conviction that the name bestowed upon this species of "Mountain Mocking-Bird" is doubly a misnomer. It is not at all imitative in its notes, and it is



Oreoscoptes montanus.

almost exclusively a resident of the artemisia plains. It seems to be chiefly confined to the great central plateau of North America, from Mexico almost to Washington Territory. Specimens have been procured from Cape St. Lucas, the Lower Colorado, Mexico, and Texas, on the south, and Nuttall met with it nearly as far north as Walla-Walla. It probably occupies the whole extent of the Great Basin.

Dr. Kennerly, who met with it while crossing the arid *mesas* west of the Rio Grande, says that while singing it was usually perched upon some bush or low tree. It was frequently seen seeking its food upon the ground, and when approached, instead of flying away, it ran very rapidly, and disappeared among the low bushes.

During the winter months it was observed near San Antonio, Texas, by Mr. Dresser; and was also found by him to be common about Eagle Pass. He noticed the same peculiarity of their running instead of their flying away when disturbed. They preferred the flat, bush-covered plains. A few remained to breed, as he obtained the eggs there, although he did not himself meet with one of the birds in summer.

It is generally represented as keeping chiefly on the ground, and obtaining

its food in this position. General Couch speaks of it as Sparrow-like in its habits.

Mr. Nuttall describes its song as cheering, and the notes of which it is composed as decidedly resembling those of the Brown Thrush (*Harporhynchus rufus*). He claims for it some of the imitative powers of the Mocking-Bird (*Mimus polyglottus*), but in this he is not supported by the observations of others. He met with its nest in a wormwood (*Artemisia*) bush on the border of a ravine; it contained four eggs of emerald green, spotted with dark olive, the spots being large, roundish, and more numerous at the larger end. The nest was composed of small twigs and rough stalks, and lined with strips of bark and bison-wool. The female flew off to a short distance, and looked at her unwelcome visitors without uttering any complaint.

The nests of this bird, so far as I have seen them, are all flat, shallow structures, with very slight depression, and loosely and rudely constructed of an intermingling of strips of bark with rootlets and the finer stems of herbaceous plants. Their eggs, usually four in number, do not vary essentially in size, shape, or marking. They measure 1 inch in length, and from .73 to .75 in breadth. Their ground color is a bright greenish-blue, marked with deep olive-brown spots, intermingled with blotches of a light lilac. There are slight variations in the proportion of green in the shade of the ground color, and also in the number and size of the spots, but these variations are unimportant.

The following are Mr. Ridgway's observations upon the habits of this species. They are full, valuable, and very carefully made: —

The *Oreoscoptes montanus* is a bird peculiar to the artemisia wastes of the Great Basin, being a characteristic species of the region between the Sierra Nevada and the Rocky Mountains. It is exclusively an inhabitant of the "sage brush," and is partial to the lower portions of the country, though it is not unfrequent on the open slope of the mountains. A more inappropriate term than "Mountain Mocking-Bird" could hardly have been chosen for this species, as its predilection for the valleys, and the fact that its song is *entirely* its own, will show. In my opinion, the term "Sage Thrasher" would be more appropriate.

In the neighborhood of Carson City, Nevada, these birds arrived about the 24th of March, and immediately upon their arrival began singing. At this time, with the *Sturnella neglecta* and *Poospiza belli*, they made sweet music in the afternoon and early morning, in the open wastes of "sage brush," around the city. The birds when singing were generally seen sitting upon the summit of a "sage" bush, faintly warbling, in the course of the song turning the head from side to side in a watchful manner. Upon being approached, they would dart downward, seemingly diving into the bush upon which they had perched, but upon a close search the bird could not be found, until it was heard again singing a hundred yards or more in the

direction from which I had approached. This peculiar, circuitous, concealed flight is a very characteristic trait of this bird, and one sure to excite attention.

As the season advanced, or about the 10th of April, when the pairing season was at hand, the songs of the males became greatly improved, increasing in sweetness and vivacity, and full of rapturous emotion; their manners, also, became changed, for they had lost all their wariness. In paying their attentions to their mates, the males would fly from bush to bush, with a peculiar, tremulous fluttering of the wings, which, when the bird alighted, were raised above the back apparently touching each other; all the while vibrating with the emotion and ecstacy that agitated the singer.

The song of this bird, though very deficient in power,—in this respect equalling no other species of *Miminae* with which I am acquainted,—is nevertheless superior to most of them in sweetness, vivacity, and variety. It has a wonderful resemblance to the beautiful subtle warbling of the *Regulus calendula*, having in fact very much the same style, with much of the tone, and about the power of the song of the *Pyrranga rubra*.

When the birds are engaged in incubation, the males become very silent, and one not familiar with their habits earlier in the season would think they never had a voice; in fact, they make no protestations even when the nest is disturbed, for, while blowing the eggs, I have had the parent birds running around me, in the manner of a robin, now and then halting, stretching forward their heads, and eying me in the most anxious manner, but remaining perfectly silent. When the young are hatched the parents become more solicitous, signifying their concern by a low, subdued *chuck*. At all times when the nest is approached, the bird generally leaves it slyly before one approaches very near it.

The nest is very bulky, composed externally of rough sticks, principally the thorny twigs of the various "sage bush" plants. Nearer the centre the principal material is fine strips of inner bark of these plants; and the lining consists of finer strips of bark, mingled with fine roots, and bits of rabbit fur. The situation of the nest varies but little, being generally placed near the middle of a bush, that is, about eighteen inches from the ground. It is generally supported against the main trunk, upon a horizontal branch. Several were found upon the ground beneath the bush, one, in fact, embedded in the soil, like that of a *Pipilo*; or as sometimes the case with the *Harporhynchus rufus*, others, again, were found in brush-heaps. In all cases, the nest was very artfully concealed, the situation being so well selected.

This bird is almost equally common in all parts of its habitat, within the limits indicated. In June, we found it abundant on the large islands in the Great Salt Lake, where many nests were found.

In autumn, it feeds, in company with many other birds, upon berries, "service berries" being its especial favorite.

GENUS **HARPORHYNCHUS**, CABANIS.

Toxostoma, WAGLER, Isis, 1831, 528. (Type *T. retula*, WAGL., not *Toxostoma*, RAF. 1816.)

Harpes, GAMBEL, Pr. A. N. S. Phila. II. 1845, 264. (Type *Harpes redivivus*, GAMB., not of GOLDFUSS, 1839.)

Harporhynchus, CABANIS, Archiv f. Naturg. 1848, I. 98. (Type *Harpes redivivus*, GAMB.)

Methriopterus, REICH. Av. Syst. Nat. 1850, pl. iv. (Type said by Gray to be *H. rufus*.)

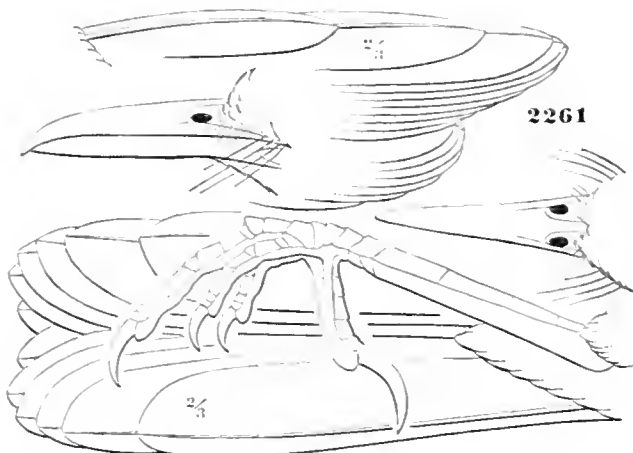
GEN. CHAR. Bill from forehead as long as, or much longer than the head; becoming more and more decurved in both jaws as lengthened. No indication of a notch. Rictus with the bristles extending beyond the nostrils. Tarsus long and stout, appreciably exceeding the middle toe and claw, strongly scutellate anteriorly. Wings considerably shorter than tail, much rounded; the first quill more than half the second; fourth or fifth longest. Tail large, much graduated; the feathers firm.

The species of this genus are all of large size, in fact, embracing the largest of the American slender-billed oscine birds. All the species differ in structure, varying especially in the length of the bill, as above stated.

It is useless to attempt a division of this genus, for there is such a gradual chain of characters between the two extremes of form (*rufus* and *crissalis*), that they even seem almost one species, when the numerous intermediate forms, shading so insensibly into each other, are considered. However, as this view would be rather extreme, in view of the really great difference of form between the species mentioned, we may consider the following as good species, several of them with one or more varieties: *rufus*, with *longicauda* and *longirostris* as varieties, the former scarcely appreciably different, the latter ranking as a permanent race; *ocellatus*, *cinnereus*, *curvirostris*, the latter with one well-marked variety, *palmeri*; *redivivus*, with most probably *lecontei* as a well-marked variety, and *crissalis*.



Harporhynchus rufus.



Harporhynchus rufus.

The seasonal differences in the plumage often make it difficult to determine these several forms; but if the following facts are borne in mind, the

trouble will be greatly lessened. In every species there is a more or less decided ochraceous tinge to the crissal region (sometimes extending forward over the flanks); except in *crissalis*, in which the lower tail-coverts and anal region are deep chestnut. In autumn and winter this ochraceous tint becomes very much deeper, as well as more prevalent, than in spring and summer; the whole plumage becomes softer, the colors more pronounced, and the markings more distinct, than when faded and worn in summer.

Synopsis of Species of *Harporhynchus*.

A. Spots beneath sharply defined and conspicuous, — much darker in color than the upper parts.

1. ***H. rufus*.** The markings lineo-cuneate; wing bands sharply defined.

Above rufous; markings below dark brown; outer tail-feathers diluted at tip; wing, 4.00; tail, 5.20; bill from nostril, .79, nearly straight; tarsus, 1.39; middle toe, .90 (1,377 ♂ Carlisle, Penn.) *Hab.* Eastern Province United States var. *rufus*.

Wing, 4.40; tail, 5.70; bill, .79; tarsus, 1.35; middle toe, .90 (5,652 ♂ Republican River). *Hab.* Plains between Missouri River to Rocky Mountains var. *longicauda*.

Above umber brown; markings beneath black; tail-feathers not paler at tip; wing, 3.90; tail, 4.90; bill, .85, slightly curved; tarsus, 1.40; middle toe, .94 (4,016 ♂ Brownsville, Tex.) *Hab.* Eastern Mexico, north to Rio Grande of Texas var. *longirostris*.

2. ***H. ocellatus*.**¹ The markings circular; wing bands conspicuous.

Above grayish-brown; markings beneath black; tail-feathers broadly tipped with white; wing, 4.10; tail, 5.60; bill, from rictus, 1.50, moderately curved; tarsus, 1.50. *Hab.* Oaxaca, Mex.

3. ***H. cinereus*.** The markings deltoid; wing bands narrow, but sharply defined.

Above brownish-cinereous; markings beneath blackish-brown; tail-feathers broadly tipped with white; wing, 4.00; tail, 4.60; bill, .88, much curved; tarsus, 1.30; middle toe, .85 (12,960 "♀" — ♂? Cape St. Lucas). *Hab.* Cape St. Lucas, Lower California.

B. Spots beneath obsolete, not darker than the plumage above; roundish in form.

4. ***H. curvirostris*.**

Above cinereous; wing bands distinct; spots below distinct, upon a white ground; femoral region and crissum very pale ochraceous; tail-feathers broadly and sharply tipped with pure white; wing, 4.30; tail, 4.50; bill, 1.00, stout, moderately curved; tarsus, 1.40; middle toe, 1.12 (7,200 ♂ Ringgold Barracks, Texas). *Hab.* from Rio Grande valley in Texas to Cordova, Orizaba, Oaxaca, Colima, and Mazatlan var. *curvirostris*.

Wing bands obsolete, and tail spots very narrow and obsolete; spots below just discernible upon a grayish ground; femoral region and crissum dilute ochraceous-brown; wing, 4.30; tail, 5.20; bill, 1.00, slender, moderately curved; tarsus, 1.30; middle toe, 1.00 (8,128 ♂ "New Mexico" — probably Eastern Arizona). *Hab.* Arizona (Camp Grant) var. *palmeri*.

¹ *Harporhynchus ocellatus*, SCLATER, P. Z. S. 1862, p. 18, pl. iii.

C. Entirely unspotted beneath.**5. H. redivivus.** Anal region and lower tail-coverts light ochraceous.

Above soft brownish-cinereous, tail considerably darker; wing bands almost obsolete, and tail-feathers merely diluted at tips. Beneath paler than above, — almost white on throat and abdomen; anal region and lower tail-coverts yellowish-ochraceous. A distinct "bridle" formed by the hair-like tips of the feathers, bordering the throat; maxillary stripe white with transverse bars of dusky; wing, 3.90; tail, 5.25; bill, 1.05, slender, moderately curved; tarsus, 1.25; middle toe, .86 (40,718 ♂ 20 miles from Colorado River, near Fort Mojave). *Hab.* Arizona (Gila River, Fort Yuma, and Fort Mojave) var. *lecontei*.

Above ashy drab, tail darker and more brownish; wing bands inconspicuous, and tail-feathers hardly diluted at tips. Beneath, the ochraceous covers the abdomen, and the throat inclines to the same. No "bridle." Cheeks and ear-coverts blackish, with conspicuous shaft-streaks of white; wing, 4.30; tail, 5.60; bill, 1.40, stout, very much bowed, — the arch regular; tarsus, 1.55; middle toe, 1.00 (3,932 ♂, California). *Hab.* Coast region of California var. *redivivus*.

6. H. crissalis. Anal region and lower tail-coverts deep chestnut.

Above, brownish-ashy with a slight purplish cast, tail not darker; no trace of wing bands; tail-feathers diluted, and tinged with rusty at tips. Beneath, of a uniform, paler tint than the upper plumage, not lighter medially; throat white, with a conspicuous "bridle"; from this up to the eye whitish, with transversely angular bars of dusky; wing, 4.00; tail, 6.50; bill, 1.25, very slender, bowed from the middle; tarsus, 1.30; middle toe, .90 (11,533 ♂ Fort Yuma). *Hab.* Region of Gila River to Rocky Mountains; north to Southern Utah (St. George, breeding; Dr. Palmer).

Harporthynchus rufus, CABANIS.**BROWN THRASHER.**

Turdus rufus, LINN. Syst. Nat. 10th ed. 1758, 169, based on CATESBY, tab. 19. — IB. Syst. Nat. 1, 1766, 293. — GÄTKE, Naumannia, 1858, 424 (Heligoland, Oct. 1837). *Harporthynchus rufus*, CAB. Mus. Hein. 1850, 82. — BAIRD, Birds N. Am. 1858, 353. — IB. Rev. Am. Birds, 44. — SCLATER, P. Z. S. 1859, 340. — IB. Catal. 1861, 8, no. 48. — SAMUELS, 163. *Mimus rufus*, PR. MAX. Cab. Jour. 1858, 180.

Figures: VIEILLOT, Ois. Am. Sept. 11, pl. lix. — WILSON, Am. Orn. 11, pl. xiv. — AUD. Orn. Biog. pl. cxvi.

SP. CHAR. Exposed portion of the bill shorter than the head. Outline of lower mandible straight. Above light cinnamon-red; beneath pale rufous-white with longitudinal streaks of dark brown, excepting on the chin, throat, middle of the belly, and under tail-coverts. These spots anteriorly are reddish-brown in their terminal portion. The inner surface of the wing and the inner edges of the primaries are cinnamon; the concealed portion of the quills otherwise is dark brown. The median and greater wing-coverts become blackish-brown towards the end, followed by white, producing two conspicuous bands. The tail-feathers are all rufous, the external ones obscurely tipped with whitish; the shafts of the same color with the vanes. Length, 11.15; wing, 4.15; tail, 5.20; tarsus, 1.30.

HAB. Eastern North America to Missouri River, and perhaps to high central plains United States, east of Rocky Mountains, north to Lake Winnipeg.

As stated in "Birds of North America" some specimens (var. *longicauda*) from beyond the Missouri River are larger than eastern birds, with longer tails, more rufous beneath; the breast spots darker. But, in passing from east to west, the change is so insensible that it is impossible to divide the series.

HABITS. This Thrush is a common species throughout a widely extended area, from the Rocky Mountains to the Atlantic, and from the Red River country, in British America, to the Rio Grande. And nearly throughout this entire territory it also resides and breeds, from Texas to the 54th parallel of latitude.

It reaches New England early in May and leaves it in the latter part of September or the first week of October, its stay varying with the season and the supply of its food. It is somewhat irregularly distributed, common in some portions of this section, and rare or even unknown in others. It is not found near the sea-coast beyond Massachusetts. It passes the winter in the Southern States, even as far to the north as Virginia, and is in full song in the neighborhood of Savannah as early as the first of March.

The song of this Thrush is one of great beauty, and is much admired by all who appreciate woodland melody of the sweetest and liveliest type. It is loud, clear, emphatic, full of variety and charm. Its notes are never imitative and cannot be mistaken by any one who is familiar with them, for those of any other bird, unless it may be some one of its western congeners. It is a very steady performer, singing for hours at a time. Its notes are given in a loud tone, and its song may often be heard to quite a distance.

In obtaining its food the Brown Thrush is at times almost rasorial in its habits. In the early spring it scratches among the leaves of the forest for worms, coleopterous grubs, and other forms of insect food. By some it is charged with scratching up the hills of early corn, but this is not a well-founded accusation. Berries of various kinds also form a large part of its food, and among these the small fruit of our gardens must be included.

This Thrush is a very affectionate and devoted bird, especially to its young. It is also prompt in going to the assistance of others of its species when in trouble. Whenever intruders approach their nests, especially if their young are far advanced, they manifest the deepest anxiety, sometimes even making a vigorous defence. The writer has a very distinct recollection of having encountered, together with a younger brother, an ignominious defeat, when making his first attempt to inspect the nest of one of these birds.

The Brown Thrush is jealous of the intrusion of other birds of its own species to a too close proximity to its nesting-place, and will assert its love of seclusion by stout battles. In Louisiana the construction of the nest is commenced quite early in March; in Pennsylvania, not until May; and in the New England States in the latter part of that month. The nest is usually not more than two or three feet from the ground. It is built in a low bush, on a cluster of briars or among vines. I have known it to be

placed in the interior of a heap of brushwood loosely thrown together. I have never met with the nest built upon the ground, but in Springfield, and in other dry and sandy localities, this is by no means an uncommon occurrence. These nests are frequently placed in close proximity to houses, and sometimes in the very midst of villages.

The nest of the Thrasher is large, and roughly but strongly built. The base is usually made of coarse twigs, sticks, and ends of branches, firmly interwoven. Within this is constructed an inner nest, composed of dried leaves, strips of bark, and strong black fibrous roots. These are lined with finer roots, horse-hair, an occasional feather, etc.

The eggs are usually four, sometimes five, and rarely six, in number. They vary both in the tints of the ground color, in those of their markings, and slightly in their shape. Their length varies from .99 to 1.12 inches, with a mean of 1.05. Their breadth ranges from .76 to .87 of an inch; mean breadth, .81. The ground color is sometimes white, marked with fine reddish-brown dots, confluent at the larger end, or forming a broad ring around the crown. In others the markings have a yellowish-brown tint. Sometimes the ground color is a light green.

***Harporhynchus rufus*, var. *longirostris*, CABAN.**

TEXAS THRASHER.

Orpheus longirostris, LAFR. R. Z. 1838, 55. — IB. Mag. de Zool. 1839, Ois. pl. i. *Torostoma longirostre*, CAB. Wieg. Arch. 1847, i. 207. *Mimus longirostris*, SCLATER, P. Z. S. 1856, 294 (Cordova). *Harporhynchus longirostris*, CAB. Mus. Hein. 1850, 81. — BAIRD, Birds N. Am. 1858, 352, pl. lii. — IB. Rev. 44. — SCLATER, P. Z. S. 1859, 339; IB. 1864, 172 (City of Mex.); IB. Catal. 1861, 8, no. 47.

SP. CHAR. Similar to *H. rufus*, the rufous of back much darker. Wings much rounded; second quill shorter than the secondaries. Exposed portion of the bill as long as the head; the lower edge decidedly decurved or concave. Above rather dark brownish-rufous; beneath pale rufous-white; streaked on the sides of the neck and body, and across the breast, with very dark brownish-black, nearly uniform throughout, much darker than in *rufus*. Two rather narrow white bands on the wings. The concealed portion of the quills dark brown. Length, 10.50; wing, 4.00; tail, 5.00; tarsus, 1.40.

HAB. Eastern Mexico; north to Rio Grande, Texas. Cordova, SCL. Orizaba (temperate region), SUMICHRAST.

Specimens from the Rio Grande to Mirador and Orizaba are quite identical, with, of course, differences among individuals. This "species" is not, in our opinion, separable from the *H. rufus* specifically; but is a race, representing the latter in the region given above, where the *rufus* itself is never found. The relations of these two forms are exactly paralleled in the *Thryothorus ludovicianus* and *T. berlandieri*, the latter being nothing more than the darker Southern representation of the former.

The Texas Thrasher appears to belong only to the Avifauna of the South-

west. It first appears as a bird of the valley of the Rio Grande, and extends from thence southward through Eastern Mexico to Cordova and Orizaba. In Arizona it is replaced by *H. palmeri*, *H. lecontei*, and *H. crissalis*, in California by *H. redivivus*, and at Cape St. Lucas by *H. cinereus*, while in the United States east of the Rocky Mountains it is represented by its nearer ally *H. rufus*.

HABITS. The eggs of this species are hardly distinguishable from those of the common Brown Thrasher (*H. rufus*), of the Atlantic States. The color of their ground is a greenish-white, which is thickly, and usually completely, covered with fine markings of a yellowish-brown. They have an average length of 1.13 inches, by .79 in breadth. So far as I have had an opportunity of observing, they do not vary from these measurements more than two per cent in length or one per cent in breadth. Their nests are usually a mere platform of small sticks or coarse stems, with little or no depression or rim, and are placed in low bushes, usually above the upper branches.

In regard to the distinctive habits of this species I have no information.

***Harporhynchus cinereus*, XANTUS.**

CAPE ST. LUCAS THRASHER.

Harporhynchus cinereus, XANTUS, *Pr. A. N. Sc.* 1859, 298. — BAIRD, *Ib.*, 303; *Review*, 46.
— SCLATER, *Catal.* 1861, 8, no. 49. — ELLIOT, *Illust.*, 1. pl. i. — COOPER, *Birds Cal.* 1, 19.

SP. CHAR. Bill as long as the head; all the lateral outlines gently decurved from the base. Bristles not very conspicuous, but reaching to the nostrils. Wings considerably shorter than the tail, much rounded. First primary broad, nearly half the length of the second; the third to the seventh quills nearly equal, their tips forming the outline of a gentle curve; the second quill shorter than the ninth. Tail considerably graduated, the lateral feathers more than an inch the shorter. Legs stout; tarsi longer than middle toe, distinctly scutellate, with seven scales.

Above ashy brown, with perhaps a tinge of rusty on the rump; beneath fulvous-white, more fulvous on the flanks, inside of wing, and crissum. Beneath, except chin, throat, and from middle of abdomen to crissum, with well-defined V-shaped spots of dark brown at the ends of the feathers, largest across the breast. Loral region hoary. Wings with two narrow whitish bands across the tips of greater and middle coverts; the quills edged externally with paler. Outer three tail-feathers with a rather obsolete white patch in the end of inner web, and across the tips of the outer.

Spring specimens are of rather purer white beneath, with the spots more distinct than as described.

Length of 12,960 (skin), 10.00; wing, 4.10; tail, 4.65; first primary, 1.60; second, 2.50; bill from gape, 1.10, from above, 1.15, from nostril, .90; tarsus, 1.26; middle toe and claw, 1.12; claw alone, .30.

HAB. Cape St. Lucas, Lower California.

This species is curiously similar in coloration to *Oreoscoptes montanus*, from which its much larger size, much longer and decurved bill, and the gradu-

ated tail, of course readily distinguish it. It agrees in some respects with *H. rufus* and *H. longirostris*, but is smaller, the bill longer and more curved; the upper parts are ashy olivaceous-brown instead of rufous, etc.

HABITS. So far as is at present known in regard to this species it appears to be confined exclusively to the peninsula of Lower California. It has, at least, been met with nowhere else. Mr. Xantus found it quite numerous in the vicinity of Cape St. Lucas, in a region which, as he describes it, was singularly unpropitious. This was a sandy shore, extending about a quarter of a mile inland, whence a cactus desert stretched about six miles up to a high range of mountains. Throughout this tract the ground is covered with a saline efflorescence. There is no fresh water within twenty-eight miles.

Mr. Xantus speaks of the habits of this bird as being similar to those of the *Oreoscoptes montanus*. It was a very abundant species at this cape, where he found it breeding among the cactus plants in large numbers. He mentions that as early as the date of his arrival at the place, April 4, he found them already with full-fledged young, and states that they continued to breed until the middle of July.

He was of the impression that the eggs of this species more nearly resemble those of the common Mocking-Bird than any others of this genus. The aggravatingly brief notes that accompanied his collections show that the general position of the nest of this species was on low trees, shrubs, and most usually, cactus plants, and in no instance at a greater elevation from the ground than four feet. Their nests were flat structures, having only a very slight depression in or near their centre. They were about 5 inches in diameter, and were very little more than a mere platform.

The eggs vary somewhat in their ground color, but exhibit only slight variations in size or shape. Their greatest length is 1.13 inches, and their average 1.12 inches. Their mean breadth is .77 inch, and their maximum .79 inch. The ground color is a greenish-white, profusely marked with spots of mingled purple and brown. In others the ground color is a bluish-green. In some specimens the spots are of a yellowish-brown, and in some the markings are much lighter.

Harporhynchus curvirostris, CABAN.

GRAY CURVE-BILL THRASHER.

Orpheus curvirostris, SWAINSON, Philos. Mag. 1827, 369 (Eastern Mexico). — M'CALL, Pr. A. N. Sc. May, 1848, 63. *Mimus curvirostris*, GRAY, Genera, 1844-49. *Toxostoma curvirostris*, BONAP. Conspectus, 1850, 277. — SCLATER, P. Z. S. 1857, 212. *Harporhynchus curvirostris*, CAB. Mus. Hein. I. 1850, 81. — BAIRD, Birds N. Am. 1858, 351, pl. li.; Ib. Rev. 45. — HEERMANN, P. R. R. Rep. X, Parke's Rep. 1859, 11. — SCLATER, P. Z. S. 1859, 339; Ib. Catal. 1861, 7, no. 46. — DRESSER, Ibis, 1865, 483. *Pomatorhinus turdinus*, TEMM. Pl. Col. 441. ? *Toxostoma vetula*, WAGLER, Isis, 1831, 528.

SP. CHAR. Exposed portion of the bill about as long as the head; considerably decurved. Above uniform grayish-brown, or light ash; beneath dull white; the anal region and under tail-coverts tinged with brownish-yellow. The under parts generally, except the chin, throat, middle of the belly, and under coverts, with rounded sub-triangular, quite well-defined spots, much like the back. These are quite confluent on the breast. Two narrow bands on the wing-coverts, and the edges of primaries and alulae, are white. The tail-feathers, except the middle, are conspicuously tipped with white. Length of female, 10 inches; wing, 4.00; tail, 4.55; tarsus, 1.20.

HAB. Adjacent regions of United States and Mexico, southward. Cordova, Orizaba, Mirador; Mazatlan, Colima, Oaxaca.

Specimens from the Rio Grande across to Mazatlan represent one species; but those from the latter locality are somewhat darker in colors, though this may be owing, in part, to the fact that they are winter birds. Considerable differences in proportions may often be noticed between individuals, but nothing strikingly characteristic of any particular region.

The specimens of the Mazatlan series (37,326 ♂, 51,523, and 51,525 ♂) have tails considerably longer than any of those from the Rio Grande, the excess amounting in the longest to nearly an inch, but one from the same locality has it *shorter* than any of the Texas specimens.

In its perfect plumage, this species has both rows of coverts distinctly tipped with white; but in the faded condition of midsummer, the bands thus produced are hardly discernible, and the spots below become very obsolete.

HABITS. This interesting species appears to be common in Western Texas, the valley of the Rio Grande, and Western Mexico. It was met with in these regions on the several railroad surveys, and is described by Dr. Heermann as possessing musical powers surpassed by few other birds. When alarmed it immediately hides itself in a thick covert of underbrush, whence it is almost impossible to dislodge it. Its food consists of fruit and berries when in their season, of insects and their larvae, and of worms. These it collects both among the trees and from the ground, on the latter of which it spends much of its time. Mr. J. H. Clark states that the nest of this bird is very similar to that of the Mocking-Bird, but is finer and much more compact. He adds that it is oftener found among the *Opuntia* than elsewhere. It is a quiet bird, rather shy, and keeps closely within the clumps of the chaparral. For a bird of its size it makes an unusual noise in flying. At Ringgold Barracks Mr. Clark's tent was pitched under a como-tree in which there was a nest of these birds. They were at first shy and seemed quite disposed to abandon their nest, but, however, soon became accustomed to their new neighbor, and went on with their parental duties. The position of their nest had been very judiciously selected, for it was during the season of the black fruit of the como, which is somewhat in the shape and size of a thimble, with a pleasant milky pulp. These constituted their principal food. The eggs in this nest were five in number. Lieutenant Couch met with it from Brownsville to Durango, where it had already paired as early as

February. He describes it as exceedingly tame and gentle in its habits, and with a song remarkably melodious and attractive. Perched on the topmost bough of a flowering mimosa, in the presence of his consort, the male will pour forth a volume of most enchanting music. Their nest is generally very nearly flat, measuring nearly six inches in circumference, and scarcely more than an inch in its greatest thickness. It has hardly any distinct cavity, and hollows but very slightly from the rim to the centre, its greatest depression having barely the depth of half an inch. The nests are composed of long coarse fibrous roots, rudely, but somewhat compactly interwoven. The inner framework is constructed of the same materials intermixed with the finer stems of grasses.

Mr. H. E. Dresser states that in the vicinity of Matamoras these birds are fond of frequenting small villages, and that he frequently found their nests within the gardens and court-yards of the houses, and near the road.

The eggs of this Thrush vary considerably in size, ranging from 1.20 to 1.03 inches in length, and from .84 to .77 of an inch in breadth. Their mean length is 1.12 inches, and their average breadth .80. They have a light green ground-color, generally, though not thickly, covered with fine brown spots.

***Harporhynchus curvirostris*, var. *palmeri*, RIDGWAY.**

PALMER'S THRASHER.

Harporhynchus curvirostris, var. *palmeri*, RIDGWAY, Report King's Expedition, V, 1872.

SP. CHAR. Bill slender, moderately curved; fifth quill longest; fourth and sixth just perceptibly shorter, and equal; second equal to ninth; first 1.55 shorter than longest. General plumage uniform grayish-umber, paler below, becoming almost dirty whitish on the throat and abdomen; lower part of the breast and abdomen with a very few just discernible irregular specks of a darker tint; lower tail-coverts dilute isabella-brown, more ochraceous at their margins; anal region and lower part of abdomen light ochraceous. No bands on wings, and tail-feathers only diluted at the tips. Maxillary stripe whitish with transverse bars of dusky. "Iris orange."

♂ (No. 8,128, "New Mexico" = Arizona, Dr. Heermann): wing, 4.30; tail, 5.00; bill (from nostril), 1.00; tarsus, 1.30; middle toe (without claw), 1.00. ♀ (49,723. Camp Grant, Tucson, Arizona, March 12, 1867; Dr. E. Palmer; with eggs): wing, 4.15; tail, 4.85; bill, .95; tarsus, 1.25; middle toe, .90.

HAB. Eastern Arizona (Tucson).

This very curious race seems to unite the characters of *curvirostris* and *lecontei*; in fact, it is so exactly intermediate between the two, that we are almost in doubt as to which it is most nearly related. Having the stout form and larger size, as well as the spots on the abdomen, of the former, it has also the uniform colors and general appearance of *lecontei*. Were it not that the nest and eggs, with the parent accompanying, had been received from Dr. Palmer, we might be tempted to consider it a hybrid between these two

species, its habitat being exactly between them, too. We have great pleasure in dedicating this curious form to Dr. Edward Palmer, who has added very much to our knowledge of the Natural History of the interesting region where the present bird is found.

Description of nest and eggs. — (13,311, Camp Grant, Arizona; Dr. E. Palmer). Nest very bulky, — 9 inches in height by 6 in width. Very elaborately constructed. The true nest, of symmetrical form, and composed of thin grass-stalks and flax-like fibres, is enclosed in an outer case of thorny sticks, thinly but strongly put together. This inner nest has a deep cavity measuring 4 inches in diameter by 3 in depth.

Eggs (two in number) measure 1.16 by .85; in shape exactly like those of *C. curvirostris*; pale blue (deeper than in *curvirostris*), rather thinly sprinkled with minute, but distinct dots of pale sepia-brown. Markings more distinct than those of *curvirostris*. R. R.

The nest was situated in a cactus-bush, four and a half feet above the ground.

Dr. Palmer remembers nothing special concerning its habits, except that the bird was very shy, and kept much on the ground, where it was seen running beneath the bushes.

Harporyhynchus redivivus, var. lecontei, BONAP.

LECONTE'S THRASHER.

Toxostoma lecontei, LAWRE. Ann. N. Y. Lyc. V, Sept. 1851, 109 (Fort Yuma). *Harporyhynchus lecontei*, BONAP. C. R. XXVIII, 1854, 57. — In. Notes Delattre, 39. — BAIRD, Birds N. Am. 1858, 350, pl. 1; 1b. Review, 47. — COOPER, Birds Cal. I, 17.

SP. CHAR. Bill much curved. Second quill about equal to the tenth; exposed portion of the first more than half the longest; outer tail-feather an inch shortest. General color above light grayish-ash, beneath much paler; the chin and throat above almost white; the sides behind brownish-yellow or pale rusty-yellow ash, of which color is the crissum and anal region. Tail-feathers rather dark brown on the under surface, lighter above; the outer edges and tips of exterior ones obscurely paler. Quills nearly like the back.

HAB. Gila River; Fort Yuma; Fort Mojave.

Since the description of the type, a second specimen (40,718♂, Fort Mojave, 20 miles from Colorado River, Sept. 30, 1865) has been obtained by Dr. Cones. This skin differs slightly from the type in size, being somewhat larger, measuring, wing 3.90, tail 5.30, bill (from nostril) 1.05; while the other measures, wing 3.70, tail 4.70, bill .98. This difference in size very probably represents that between the sexes, the type most likely being a female, though the sex is not stated. Owing to the different seasons in which the two specimens were obtained, they differ somewhat in plumage also. Dr. Cones's specimen is somewhat the darker, and the plumage has a softer, more blended aspect, and a more ashy tinge of color; the ochraceous of the crissal region is also slightly deeper. No other differences are appreciable.

HABITS. Leconte's Thrasher is a new and comparatively little known

species. A single specimen was obtained by Dr. Leconte near Fort Yuma, and described by Mr. Lawrence in 1851, and remained unique for many years. In 1861 Dr. Cooper presented a paper to the California Academy of Sciences, in which this bird is given among a list of those new to that State. He then mentions that he found it common about the Mojave River, and that he procured two specimens.

Dr. Cones, in his valuable paper on the birds of Arizona, speaks of obtaining, in 1865, a specimen of this rare species on a dry plain covered thickly with mesquite and cactus, near Fort Mojave. This bird was very shy and restless, fluttered hurriedly from one cactus to another, until he at last shot it where it seemed to fancy itself hidden among the thick fronds of a large yucca. Its large stout feet admirably adapt it for its partially terrestrial life, and it apparently spends much of its life upon the ground, where it runs rapidly and easily. Its flight he describes as swift but desultory, and accompanied by a constant flirting of the tail. He considers this species as inhabiting the whole valley of the Colorado and Gila, and thinks that it does not leave the vicinity of these streams for the mountains.

Dr. Cooper found a nest of this species, but without eggs, built in a yucca, and similar to that of *H. redivivus*. In his Report on the Birds of California, Dr. Cooper speaks of finding this bird common on the deserts, along the route between the Colorado Valley, wherever there was a thicket of low bushes surrounded by sand-hills. Its notes, habits, and general appearance were like those of *H. redivivus*.

Harporhynchus redivivus, CABAN.

CALIFORNIA THRASHER.

Harpes rediviva, GAMBEL, Pt. A. N. S. II, Aug. 1845, 264. *Toxostoma rediviva*, GAMBEL, J. A. N. Sc. 2d ser. I, 1847, 42. — CASSIN, Illust. I, 1855, 260, pl. xlii. *Harporhynchus redivivus*, CABANIS, Archiv Naturg. 1848, 98. — BAIRD, Birds N. Am. 1858, 349; Rev. 48. — SCLATER, P. Z. S. 1859, 339. — COOPER, Birds Cal. I, 15.

SP. CHAR. Wing much rounded; the second quill shorter than the secondaries. Tail much graduated. Bill much decurved, longer than the head. Above brownish-olive, without any shade of green; beneath pale cinnamon, lightest on the throat, deepening gradually into a brownish-rufous on the under tail-coverts. The fore part of the breast and sides of the body brown-olive, lighter than the back. An obscure ashy superciliary stripe, and another lighter beneath the eye. Ear-coverts and an indistinct maxillary stripe dark brown; the shafts of the former whitish. Ends and tips of tail-feathers obsoletely paler. Length, 11.50 inches; wing, 4.20; tail, 5.75; tarsus, 1.55.

HAB. Coast region of California.

HABITS. The California Thrasher appears to have a somewhat restricted distribution, being confined to the coast region of California, where, however, it is quite abundant. It was first met with by Dr. Gambel, near Monterey. The specimens were obtained on the ground where they were searching for

coleopterous insects. Dr. Heermann afterwards found this bird abundant in the southern part of California. It was difficult of approach, diving into the thick bushes, running some distance on the ground, and becoming afterwards unapproachable. He speaks of its song as a flood of melody equalled only by the song of the Mocking-Bird (*Mimus polyglottus*). Colonel McCall also describes its song as of exquisite sweetness, "placing it almost beyond rivalry among the countless songsters that enliven the woods of America." He also states that it is as retiring and simple in its manners as it is brilliant in song.

In the character of its flight it is said to strongly resemble the Brown Thrasher (*H. rufus*) of the Eastern States. Their harsh, scolding notes, when their nest is approached, their motions and attitudes, are all very similar to those of *H. rufus* under like circumstances. Colonel McCall ranks the song of this species as far superior to that of any other Thrush. Without possessing the powerful voice or imitative faculties of the Mocking-Bird, its notes are described as having a liquid mellowness of tone, with a clearness of expression and volubility of utterance that cannot be surpassed.

A nest of this bird found by Dr. Heermann was composed of coarse twigs, and lined with slender roots, and not very carefully constructed. Mr. Hepburn writes that a nest found by him was in a thick bush about five feet from the ground. It was a very untidy affair, a mere platform of sticks, almost as carelessly put together as that of a pigeon, in which, though not in the centre, was a shallow depression about 4 inches in diameter, lined with fine roots and grass. It contained two eggs with a blue ground thickly covered with soot-colored spots confluent at the larger end, and in coloring not unlike those of the *Turdus ustulatus*. The eggs measured 1.19 inches by .81 of an inch. Dr. Cooper gives their measurement as 1.10 of an inch by .85. Two eggs belonging to the Smithsonian Institution (2,040, *a* and *b*) measure, one 1.19 by .81, the other 1.14 by .83. The former has a bluish-green ground sparsely spotted with olive-brown markings; the other has a ground of a light yellowish-green, with numerous spots of a russet brown.

The general character of their nest is, as described, a coarse, rudely constructed platform of sticks and coarse grass and mosses, with but a very slight depression. Occasionally, however, nests of this bird are more carefully and elaborately made. One (13,072) obtained near Monterey, by Dr. Canfield, has a diameter of 6 inches, a height of 3, with an oblong-oval cavity 2 inches in depth. Its outside was an interweaving of leaves, stems, and mosses, and its lining fine long fibrous roots.

These birds are chiefly found frequenting the dense chaparral that lines the hillsides of California valleys, forming thickets, composed of an almost impenetrable growth of thorny shrubs, and affording an inviting shelter. In such places they reside throughout the year, feeding upon insects, for the procuring of which their long curved bills are admirably adapted, as

also upon the berries which generally abound in these places. Their nests usually contain three eggs. Dr. Cooper states that their loud and varied song is frequently intermingled with imitations of other birds, though the general impression appears to be that they are not imitative, and do not deserve to be called, as they often are, a mocking-bird.

Harpornhynchus crissalis, HENRY.

RED-VENTED THRASHER.

Harpornhynchus crissalis, HENRY, Pr. A. N. Se. May, 1858. — BAIRD, Birds N. Am. 1858, 350, pl. lxxxii; Review, 47. — COOPER, Birds Cal. I, 18.

SP. CHAR. Second quill about as long as the secondaries. Bill much curved; longer than the head. Above olive brown, with a faint shade of gray; beneath nearly uniform brownish-gray, much paler than the back, passing insensibly into white on the chin; but the under tail-coverts dark brownish-rufous, and abruptly defined. There is a black maxillary stripe cutting off a white one above it. There do not appear to be any other stripes about the head. There are no bands on the wings, and the tips and outer edges of the tail-feathers are very inconspicuously lighter than the remaining portion. Length, 11 inches; wing, 4.00; tail, 5.80; tarsus, 1.25.

HAB. Region of the Gila River, to Rocky Mountains; Southern Utah (St. George, Dr. Palmer).

A second specimen (11,533) of this rare species is larger than the type, but otherwise agrees with it. Its dimensions are as follows: —

Length before skinning, 12.50; of skin, 12.50; wing, 3.90; tail, 6.50; its graduation, 1.45; first quill, 1.50; second, .41; bill from forehead (chord of curve), 1.65, from gape, 1.75, from nostril, 1.30; curve of culmen, 1.62; height of bill at nostril, .22; tarsus, 1.30; middle toe and claw, 1.12.

The bill of this species, though not quite so long as in *redivivus*, when most developed, is almost as much curved, and much more slender, — the depth at nostrils being but .22 instead of .26. The size of this specimen is equal to the largest of *redivivus* (3,932); the tail absolutely longer. The feet are, however, considerably smaller, the claws especially so; the tarsus measures but 1.30, instead of 1.52; the middle claw .29, instead of .36. With these differences in form, however, it would be impossible to separate the two generically.

A third specimen (No. 60,958 ♀, St. George, Utah, June 9, 1870), with nest and eggs, has recently been obtained by Dr. Palmer. This specimen, being a female, is considerably smaller than the type, measuring only: wing, 3.90; tail, 6.00; bill, from nostril, 1.15. The plumage is in the burnt summer condition, and has a peculiar reddish cast.

HABITS. Of this rare Thrush little is known. So far as observed, its habits appear to be nearly identical with those of the Californian species (*H. redivivus*). It is found associated in the same localities with *H. lecontei*, which also it appears to very closely resemble in all respects, so far as ob-

served. The first specimen was obtained by Dr. T. C. Henry, near Mimbres, and described by him in May, 1858, in the Proceedings of the Philadelphia Academy of Sciences. A second specimen was obtained by H. B. Möllhausen, at Fort Yuma, in 1863. Dr. Cones did not observe it at Fort Whipple, but thinks its range identical with that of *H. lecontei*.

Dr. Cooper found this species quite common at Fort Mojave, but so very shy that he only succeeded in shooting one, after much watching for it. Their song, general habits, and nest he speaks of as being in every way similar to those of *H. redivivus*.

The eggs remained unknown until Dr. E. Palmer had the good fortune to find them at St. George, Southern Utah, June 8, 1870. The nest was an oblong flat structure, containing only a very slight depression. It was very rudely constructed externally of coarse sticks quite loosely put together; the inner nest is made of finer materials of the same. The base of this nest was 12 inches long, and 7 in breadth; the inner nest is circular, with a diameter of $4\frac{1}{2}$ inches.

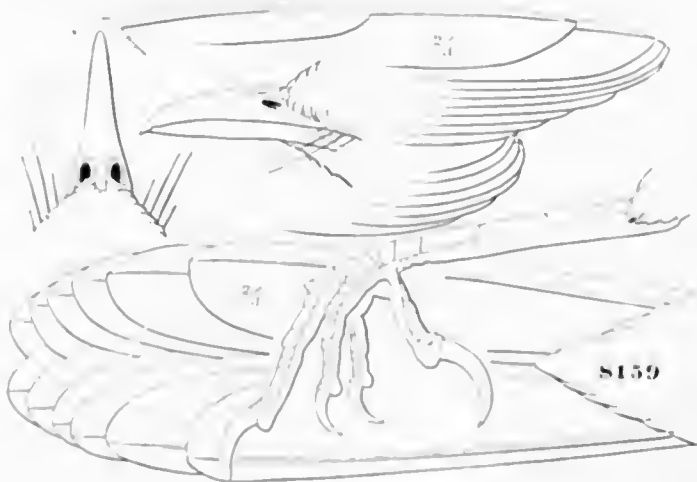
The eggs are of an oblong-oval shape, one end being a little less obtuse than the other. In length they vary from 1.15 to 1.12 inches, and in breadth from .84 to .82 of an inch. They are of a uniform blue color, similar to the eggs of the common Robin (*Turdus migratorius*), only a little paler or of a lighter tint. In the total absence of markings they differ remarkably from those of all other species of the genus.

GENUS **MIMUS**, BOIE.

Mimus, BOIE, Isis, Oct. 1826, 972. (Type *Turdus polyglottus*, LINN.)

Orpheus, SWAINSON, Zool. Jour. III, 1827, 167. (Same type.)

GEN. CHAR. Bill not much more than half the length of the head; gently decurved



Mimus polyglottus

from the base, notched at tip; commissure curved. Gonys straight, or slightly concave. Rictal bristles quite well developed. Wings rather shorter than the tail. First primary about equal to, or rather more than, half the second; third, fourth, and fifth quills nearly equal, sixth scarcely shorter. Tail considerably graduated; the feathers still rather narrow, especially the outer webs, lateral feathers about three quarters of an inch the shorter in the type. Tarsi longer than middle toe and claw by rather less than an additional claw; tarsi conspicuously and strongly scutellate; broad plates seven.

Of this genus there are many species in America, although but one occurs within the limits of the United States.

The single North American species *M. polyglottus* is ashy brown above, white beneath; wings and tail black, the former much varied with white.

Mimus polyglottus, BOIE.

MOCKING-BIRD.

Turdus polyglottus, LINN. Syst. Nat. 10th ed. 1758, 169; 12th ed. 1766, 293. — *Mimus polyglottus*, BOIE, Isis, 1826, 972. — SCLATER, P. Z. S. 1856, 212. — IB. 1859, 340. — IB. Catal. 1861, 8, no. 51. — BAIRD, Birds N. Am. 1858, 344. — IN. Rev. 48. — SAMUELS, 167. — COOPER, Birds Cal. I, 21. — GUNDLACH, Repertorio, 1865, 230 (Cuba). — DRESSER, Ibis, 1865, 230. — COUES, Pt. A. N. Sc. 1866, 65 (Arizona). ? *Orpheus leucopterus*, VIGORS, Zool. Beechey, 1839.

Figures: WILSON, Am. Orn. II. 1810, pl. x, fig. 1. — AUD. Orn. Biog. I, 1831, pl. xxi. — IB. Birds Amer. II, 1841, pl. 137.

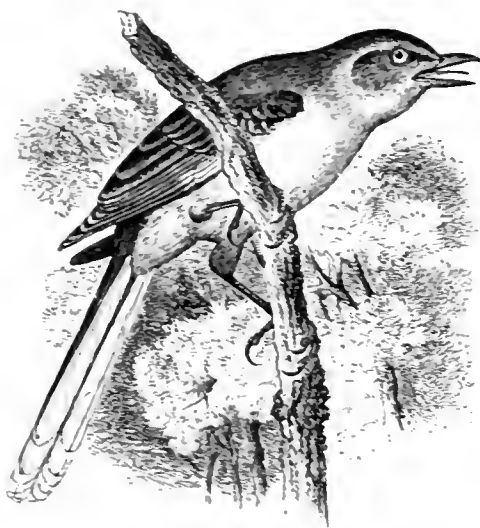
SP. CHAR. Third and fourth quills longest: second about equal to eighth; the first half or more than half the second. Tail considerably graduated. Above ashy brown, the feathers very obsoletely darker centrally, and towards the light plumbeous downy basal portion (scarcely appreciable, except when the feathers are lifted). The under parts are white, with a faint brownish tinge, except on the chin, and with a shade of ash across the breast. There is a pale superciliary stripe, but the lores are dusky. The wings and tail are dark brown, nearly black, except the lesser wing-coverts, which are like the back; the middle and greater tipped with white, forming two bands; the basal portion of the primaries white; most extended on the inner primaries. The outer tail-feather is white, sometimes a little mottled: the second is mostly white, except on the outer web and towards the base; the third with a white spot on the end: the rest, except the middle, very slightly or not at all tipped with white. The bill and legs are black. Length, 9.50; wing, 4.50; tail, 5.00.

Young. Similar, but distinctly spotted with dusky on the breast, and obsoletely on the back.

HAB. North America, from about 40° (rare in Massachusetts, Samuels), south to Mexico. Said to occur in Cuba.

The Mocking-Birds are closely allied, requiring careful comparison to distinguish them. A near ally is *M. orpheus*, of Jamaica, but in this the outer feather is white, and the 2d, 3d, and 4th tail-feathers are marked like the 1st, 2d, and 3d of *polyglottus*, respectively.

We have examined one hundred and fourteen specimens, of the present species, the series embracing large numbers from Florida, the Rio Grande, Cape St. Lucas, and Mazatlan, and numerous specimens from intermediate localities. The slight degree of variation



Mimus polyglottus.

manifested in this immense series is really surprising; we can discover no difference of color that does not depend on age, sex, season, or the individual (though the variations of the latter kind are exceedingly rare, and when noticed, very slight). Although the average of Western specimens have slightly longer tails than Eastern, a Florida example (No. 54,850, ♂, Enterprise, Feb. 19), has a tail as long as that of the longest-tailed Western one (No. 8,165, Fort Yuma, Gila River, Dec.). Specimens from Colima, Mirador, Orizaba, and Mazatlan are quite identical with Northern ones.

HABITS. The Mocking-Bird is distributed on the Atlantic coast, from Massachusetts to Florida, and is also found to the Pacific. On the latter coast it exhibits certain variations in forms, but hardly enough to separate it as a distinct species. It is by no means a common bird in New England, but instances of its breeding as far north as Springfield, Mass., are of constant occurrence, and a single individual was seen by Mr. Boardman near Calais, Me. It is met with every year, more or less frequently, on Long Island, and is more common, but by no means abundant, in New Jersey. It is found abundantly in every Southern State, and throughout Mexico. It has also been taken near Grinnell, Iowa.

A warm climate, a low country, and the vicinity of the sea appear to be most congenial to their nature. Wilson found them less numerous west of the Alleghany than on the eastern side, in the same parallels. Throughout the winter he met with them in the Southern States, feeding on the berries of the red cedar, myrtle, holly, etc., with which the swampy thickets abounded. They feed also upon winged insects, which they are very expert in catching. In Louisiana they remain throughout the entire year, approaching farm-houses and plantations in the winter, and living about the gardens and out-houses. They may be frequently seen perched upon the roofs of houses and on the chimney-tops, and are always full of life and animation. When the weather is mild the old males may be heard singing with as much spirit as in the spring or summer. They are much more familiar than in the more northern States. In Georgia they do not begin to sing until February.

The vocal powers of the Mocking-Bird exceed, both in their imitative notes and in their natural song, those of any other species. Their voice is full, strong, and musical, and capable of an almost endless variation in modulation. The wild scream of the Eagle and the soft notes of the Bluebird are repeated with exactness and with apparently equal facility, while both in force and sweetness the Mocking-Bird will often improve upon the original.

The song of the Mocking-Bird is not altogether imitative. His natural notes are bold, rich, and full, and are varied almost without limitation. They are frequently interspersed with imitations, and both are uttered with a rapidity and emphasis that can hardly be equalled.

The Mocking-Bird readily becomes accustomed to confinement, and loses little of the power, energy, or variety of its song, but often much of its sweet-

ness in a domesticated state. The mingling of unmusical sounds, like the crowing of cocks, the cackling of hens, or the creaking of a wheelbarrow, while they add to the variety, necessarily detracts from the beauty of his song.

The food of the Mocking-Bird is chiefly insects, their larvæ, worms, spiders, etc., and in the winter of berries, in great variety. They are said to be very fond of the grape, and to be very destructive to this fruit. Mr. G. C. Taylor (*Ibis*, 1862, p. 130) mentions an instance that came to his knowledge, of a person living near St. Augustine, Florida, who shot no less than eleven hundred Mocking-Birds in a single season, and buried them at the roots of his grape-vines.

Several successful attempts have been made to induce the Mocking-Bird to rear their young in a state of confinement, and it has been shown to be, by proper management, perfectly practicable.

In Texas and Florida the Mocking-Bird nests early in March, young birds appearing early in April. In Georgia and the Carolinas they are two weeks later. In Pennsylvania they nest about the 10th of May, and in New York and New England not until the second week of June. They select various situations for the nest; solitary thorn-bushes, an almost impenetrable thicket of brambles, an orange-tree, or a holly-bush appear to be favorite localities. They often build near the farm-houses, and the nest is rarely more than seven feet from the ground. The base of the nest is usually a rudely constructed platform of coarse sticks, often armed with formidable thorns surrounding the nest with a barricade. The height is usually 5 inches, with a diameter of 8. The cavity is 3 inches deep and 5 wide. Within the external barricade is an inner nest constructed of soft fine roots.

The eggs, from four to six in number, vary in length from .94 to 1.06 inches, with a mean length of .99. Their breadth varies from .81 to .69 of an inch, mean breadth .75. They also exhibit great variations in the combinations of markings and tints. The ground color is usually light greenish-blue, varying in the depth of its shade from a very light tint to a distinct blue, with a slight greenish tinge. The markings consist of yellowish-brown and purple, chocolate-brown, russet, and a very dark brown.

GENUS **GALEOSOPTES**, CABANIS.

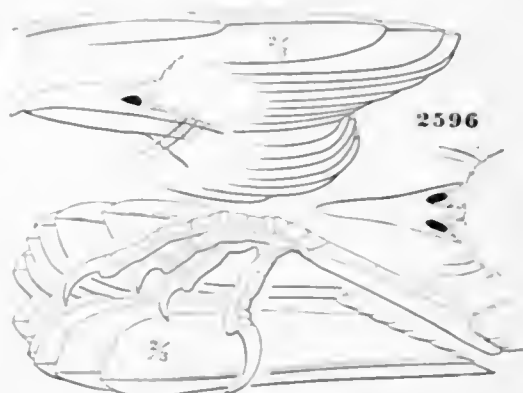
Galeoscoptes, CABANIS, Mus. Hein. I, 1850, 82. (Type *Muscicapa carolinensis*, L.)

GEN. CHAR. Bill shorter than the head, rather broad at base. Rictal bristles moderately developed, reaching to the nostrils. Wings a little shorter than the tail, rounded; secondaries well developed; fourth and fifth quills longest; third and sixth little shorter; first and ninth about equal, and about the length of secondaries; first quill more than half the second, about half the third. Tail graduated; lateral feather about .70 shorter than the middle. Tarsi longer than middle toe and claw by about an additional half-claw; scutellate anteriorly, more or less distinctly in different specimens; scutellæ about seven.

The conspicuous naked membranous border round the eye of some Thrushes, with the bare space behind it, not appreciable.

There is little difference in form between the single species of *Galeoscoptes* and *Mimus polyglottus*, beyond the less degree of definition of the tarsal plates; and but for the difference in coloration (uniform plumbeous instead of gray above and white beneath), we would hardly be inclined to distinguish the two generically.

The single species known is lead-colored, with black cap, and chestnut-red under tail-coverts.



Galeoscoptes carolinensis.

Galeoscoptes carolinensis, CABAN.

THE CATBIRD.

Muscicapa carolinensis, LINN. Syst. Nat. I, 1766, 328. *Turdus carolinensis*, LICHT. Verz. 1823, 38. — D'ORBIGNY, La Sagra's Cuba, Ois. 1840, 51. *Orpheus carolinensis*, JONES, Nat. Bermuda, 1859, 27 (breeds). *Mimus carolinensis*, GRAY, BAIRD, Birds N. Am. 1859, 346. — BRYANT, Pr. Bost. Soc. 1867, 69 (Inagua). — LORD, Pr. R. Art. Inst. (Woolwich), IV, 1864, 117 (east of Cascade Mts.). *Galeoscoptes carolinensis*, Cab. Mus. Hein. I, 1859, 82 (type of genus). — IB. Jour. Orn. 1855, 470 (Cuba). — GUNDLACH, Repert. 1865, 230 (Cuba, very common). — SELATER, Catal. Birds, 1861, 6, no. 39. — SEL. & SALV. Pr. 1867, 278 (Mosquito Coast). — BAIRD, Rev. 1864, 54. — SAMUELS, 172. — COOPER, Birds Cal. I, 23.

Figures: AUD. B. A. II, pl. 140. — IB. Orn. Biog. II, pl. 28. — VIEILLOT, Ois. Am. Sept. II, pl. lxxvii. — WILSON, Am. Orn. II, pl. xiv, f. 3.

SP. CHAR. Third quill longest; first shorter than sixth. Prevailing color dark plumbeous, more ashy beneath. Crown and nape dark sooty-brown. Wings dark brown, edged with plumbeous. Tail greenish-black; the lateral feathers obscurely tipped with plumbeous. The under tail-coverts dark brownish-chestnut. Female smaller. Length, 8.85; wing, 3.65; tail, 4.00; tarsus, 1.65.



Galeoscoptes carolinensis.

HAB. United States, north to Lake Winnipeg, west to head of Columbia, and Cascade Mountains (Lord); south to Panama R. R.; Cuba; Bahamas; Bermuda (breeds). Accidental in Heligoland Island, Europe. Oaxaca, Cordova, and Guatemala. SELATER; Mosquito Coast, SEL. & SALV.; Orizaba (winter), SEMICHAIST; Yucatan, LAWRE.

Western specimens have not appreciably longer tails than Eastern. Central American examples, as a rule, have the plumbeous of a more bluish cast than is usually seen in North American skins.

HABITS. The Catbird has a very extended geographical range. It is abundant throughout the Atlantic States, from Florida to Maine: in the central portion of the continent it is found as far north as Lake Winnipeg.

On the Pacific coast it has been met with at Panama, and also on the Columbia River. It is occasional in Cuba and the Bahamas, and in the Bermudas is a permanent resident. It is also found during the winter months abundant in Central America. It breeds in all the Southern States with possibly the exception of Florida. In Maine, according to Professor Verrill, it is as common as in Massachusetts, arriving in the former place about the 20th of May, about a week later than in the vicinity of Boston, and beginning to deposit its eggs early in June. Near Calais it is a less common visitant.

The Northern migrations of the Catbird commence early in February, when they make their appearance in Florida, Georgia, and the Carolinas. In April they reach Virginia and Pennsylvania, and New England from the 1st to the 10th of May. Their first appearance is usually coincident with the blossoming of the pear-trees. It is not generally a popular or welcome visitant, a prejudice more or less wide spread existing in regard to it. Yet few birds more deserve kindness at our hands, or will better repay it. From its first appearance among us, almost to the time of departure in early fall, the air is vocal with the quaint but attractive melody, rendered all the more interesting from the natural song being often blended with notes imperfectly mimicked from the songs of other birds. The song, whether natural or imitative, is always varied, attractive, and beautiful.

The Catbird, when once established as a welcome guest, soon makes itself perfectly at home. He is to be seen at all times, and is almost ever in motion. They become quite tame, and the male bird will frequently apparently delight to sing in the immediate presence of man. Occasionally they will build their nest in close proximity to a house, and appear unmindful of the presence of the members of the family.

The Catbird's power of mimicry, though limited and imperfectly exercised, is frequently very amusing. The more difficult notes it rarely attempts to copy, and signally fails whenever it does so. The whistle of the Quail, the cluck of a hen calling her brood, the answer of the young chicks, the note of the Pewit Flycatcher, and the refrain of Towhee, the Catbird will imitate with so much exactness as not to be distinguished from the original.

The Catbirds are devoted parents, sitting upon their eggs with great closeness, feeding the young with assiduity, and accompanying them with parental interest when they leave the nest, even long after they are able to provide for themselves. Intruders from whom danger is apprehended they will boldly attack, attempting to drive away snakes, cats, dogs, and sometimes even man. If these fail they resort to piteous cries and other manifestations of their great distress.

Towards each other they are affectionate and devoted, mutually assisting

in the construction of the nest; and as incubation progresses the female, who rarely leaves the nest, is supplied with food, and entertained from his exhaustless vocabulary of song, by her mate. When annoyed by an intruder the cry of the Catbird is loud, harsh, and unpleasant, and is supposed to resemble the outcry of a cat, and to this it owes its name. This note it reiterates at the approach of any object of its dislike or fear.

The food of the Catbird is almost exclusively the larvæ of the larger insects. For these it searches both among the branches and the fallen leaves, as well as the furrows of newly ploughed fields and cultivated gardens. The benefit it thus confers upon the farmer and the horticulturist is very great, and can hardly be overestimated.

The Catbird can with proper painstaking be raised from the nest, and when this is successfully accomplished they become perfectly domesticated, and are very amusing pets.

They construct their nests on clusters of vines or low bushes, on the edges of small thickets, and in retired places, though almost always near cultivated ground. The usual materials of their nests are dry leaves for the base, slender strips of long dry bark, small twigs, herbaceous plants, fine roots, and finer stems. They are lined with fine dry grasses, and sedges. Their nests average 4 inches in height by 5 in diameter. The diameter and depth of the cavity are $3\frac{1}{2}$ inches. The eggs are of a uniform deep bluish-green, and measure .97 in length and .69 of an inch in breadth.

FAMILY CINCLIDÆ. — THE DIPPERS.

On page 2 will be found the characteristics of this family, which need not be here repeated. There is only a single genus, *Cinclus*, with four American species, and several from Europe and Asia.

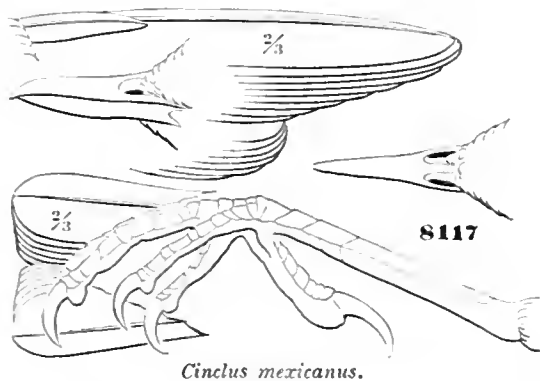
GENUS CINCLUS, BECHSTEIN.

Hydrobata, VIEILLOT, Analyse, 1816 (Ag.). — BAIRD, B. N. A. 229.

Cinclus, BECHSTEIN, Gemein. Naturg. 1802. (Not of Moehring, 1752. Type *Sturnus cinclus*, L.) — SALVIN, Ibis, 1867, 109. (Monograph.)

GEN. CHAR. Bill without any bristles at the base; slender, subulate; the mandible bent slightly upward; the culmen slightly concave to near the tip, which is much curved

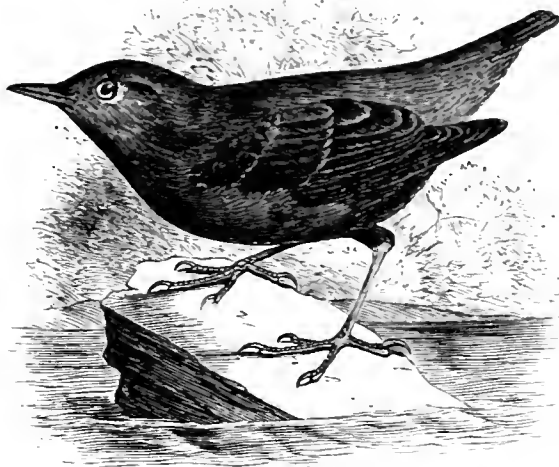
and notched; the commissural edges of the bill finely nicked towards end. Feet large and strong, the toes projecting considerably beyond the tail; the claws large. Lateral toes equal. Tail very short and even; not two thirds the wings, which are concave and somewhat falcate. The first primary is more than one fourth the longest. Eggs white.



Cinclus mexicanus.

The slightly upward bend of the bill, somewhat as in *Anthus*, renders

the culmen concave, and the commissure slightly convex. The maxilla at base is nearly as high as the mandible; the whole bill is much compressed and attenuated. The lateral claws barely reach the base of the middle one, which is broad; the inner face extended into a horny lamina, with one or two notches or pectinations somewhat as in *Caprimulgida*. The stiffened sub-falcate wings are quite remarkable. The tail is so short that the upper coverts extend nearly to its tip.



Cinclus mexicanus.

The species are all dull-colored birds, usually brown, sometimes varied with white on the head, back, or throat. They inhabit mountainous sub-alpine regions abounding in rapid streams, and always attract attention by their habit of feeding under water, searching among the gravel and stones for their insect prey.

The only other species at all allied to the single North American one are the *C. ardesiacus* of Central America, and *C. pallasi* of Eastern Asia. They may be easily distinguished by the following characters:—

Plumage beneath scarcely lighter than that above; head and neck brownish, darkest above. Wing, 4.00; tail, 2.15; bill, .50; tarsus, 1.20; middle toe, .85. Legs (in life), pinkish white (8,496 Fort Mass. N. M.). HAB. Mountains of Middle Province from Sitka, south to Guatemala var. *mexicanus*.

Plumage beneath much lighter than that above, — very light along the median line; head not brownish, the contrast in shade between upper and lower surfaces very marked. Wing, 3.50; tail, 2.05; bill, .45; tarsus, 1.30; middle toe, .90. Legs yellow. (42,788 ♂ Costa Rica). HAB. Guatemala and Costa Rica. var. *ardesiacus*.¹

Plumage uniform dusky-brown, middle of belly blackish; *back and rump squamated with black*; wings and tail blackish-brown. Total length, 8.00; wing, 4.00; tail, 2.50; tarsus, 1.25; bill (to rictus), 1.10 (Salvin). HAB. Lake Baikal to Kamtschatka; Amoorland; S. E. Siberia; Japan (Salvin) var. *pallasi*.²

Cinclus mexicanus, SWAINS.

AMERICAN DIPPER; WATER OUZEL.

Cinclus pallasi, BON. Zool. Jour. II, 1827, 52 (not the Asiatic species). *Cinclus mexicanus*, Sw. Phil. Mag. 1827, 368. — SCLATER, Catal. 1861, 10. — SALVIN, Ibis, 1860, 190; 1867, 120 (Guatemala). — BAIRD, Review, 60. — DALL & BANNISTER (Alaska). — COOPER, Birds Cal. I, 25. *Hydrobatu mexicana*, BAIRD, Birds N. Am. 1858, 229. — COOPER & SUCKLEY, Rep. P. R. R. XII, II, 1859, 175 (nest). *Cinclus americanus*, RICH. F. B. A. II, 1831, 273. *Cinclus unicolor*, BON.; *C. mortoni*, TOWNS.; *C. townsendi*, "AUD." TOWNS.

Figures: BONAPARTE, Am. Orn. II, 1828, pl. xvi, fig. 1. — AUD. Orn. Biog. pl. cccclxx, 435. — In. Birds Amer. II, pl. cxxxvii.

SP. CH. Above dark plumbeous, beneath paler; head and neck all round a shade of clove or perhaps a light sooty-brown; less conspicuous beneath. A concealed spot of white above the anterior corner of the eye and indications of the same sometimes on the lower eyelid. Immature specimens usually with the feathers beneath edged with grayish-white; the greater and middle wing-coverts and lesser quills tipped with the same. The colors more uniform. Length, 7.50; wing, 4.00; tail, 2.55.

Young. Similar to the adult, but much mixed with whitish medially beneath; this in form of longitudinal suffusions.

Autumnal and winter specimens have numerous transverse crescents of whitish on lower parts and wings, — these very especially conspicuous posteriorly: the secondaries are also conspicuously terminated with a white crescent. Bill brown, paler toward base of lower mandible. In spring and summer the bill entirely black, and the whitish markings almost entirely disappear; the young bird has a greater amount of white beneath than the adult in winter dress, and this white is disposed in longitudinal, not transverse, suffusions. The color of the legs appears to be the same at all seasons.

¹ *C. ardesiacus*, SALVIN, Ibis, N. S. III, 121, pl. ii.

² *C. pallasi*, TIMM. Man. d'Orn. I, p. 177. — SALVIN, Ibis, III, 1867, 119. (*Sturnus cinclus*, var. PALLAS, Zoogr. R. - As. I, 126.)

Specimens, of any age, from the coast of Oregon and the Cascade Mountains, have the head more deeply brownish than those from other regions.

HAB. Found through the mountainous region of the central and western part of North America, from Fort Halkett south into Mexico and Guatemala. Orizaba (Alpine region)

SMITH. None received from the coast region of California. Abundant on the N. W. coast, Laramie Peak and Deer Creek, Neb.

This species has a wide range along the mountainous region of North and Middle America. Mexican specimens are darker.

HABITS. This interesting bird inhabits exclusively the mountainous portions of North America west of the Mississippi from Alaska south to Guatemala. It does not appear to have been obtained on the coast of California, nor in the valley of the Mississippi. In the British Possessions specimens have been procured on Fraser's River, at Fort Halkett, and at Colville. At the latter place Mr. J. K. Lord states that a few remain and pass the winter. They are found among the mountain streams of Vera Cruz, and probably throughout Mexico, and no doubt may be met with in all the highlands between these extreme points. Dr. Newberry met with it in the rapid streams of the Cascade Mountains. He describes it as flitting along in the bed of the stream, from time to time plunging into the water and disappearing, to appear again at a distant point, up or down the stream, skipping about from stone to stone, constantly in motion, jerking its tail and moving its body somewhat in the manner of a wren.

Dr. Cooper observed this species both on the Columbia and its tributaries, and also among the mountain streams of the Coast Range west of Santa Clara. At the latter place he found a pair mated as early as March 16th. At sunset he heard the male singing very melodiously, as it sat on one of its favorite rocks in the middle of the foaming rapids, making its delightful melody heard for quite a long distance above the sound of the roaring waters.

"This bird," adds Dr. Cooper, "combines the form of a sandpiper, the song of a canary, and the aquatic habits of a duck. Its food consists almost entirely of aquatic insects, and these it pursues under water, walking and flying with perfect ease beneath a depth of several feet of water." He also states that they do not swim on the surface, but dive, and sometimes fly across streams beneath the surface; that their flight is rapid and direct, like that of a sandpiper; also that they jerk their tails in a similar manner, and generally alight on a rock or log.

Dr. Cooper on the 5th of July found a nest of this bird at a saw-mill on the Chehalis River, built under the shelving roots of an enormous arbor-vitæ that had floated over, and rested in a slanting position against the dam. The floor was of small twigs, the sides and roof arched over it like an oven, and formed of moss, projecting so as to protect and shelter the opening, which was large enough to admit the hand. Within this nest was a brood of half-fledged young. The parents were familiar and fearless, and had become

accustomed to the society of the millers. They had previously raised another brood that season.

The same observant naturalist, some time afterwards, in May, found the nest of another pair, a few miles north of Santa Clara. This was built near the foot of a mill-dam, resting on a slight ledge under an overhanging rock, from which water was continually dropping. It was, in shape, like an oven, with a small doorway, and it was built externally of green moss, which, being still living, prevented the easy discovery of the nest. It was lined with soft grass, and contained young.

These birds are found singly or in pairs, and never more than two together. They are never found near still water, and frequent only wild mountain-streams, cascades, eddies, and swift currents.

According to Mr. Dall's observations in Alaska, the species is essentially solitary. He obtained several specimens in January, February, and March, always near some open, unfrozen spots in the Nulato River. It was only found in the most retired spots, and almost invariably alone. When disturbed, it would dive into the water, even in midwinter.

Mr. Ridgway describes the Dipper as remarkably quick, as well as odd, in its movements, — whether walking in the shallow bed of the stream, or standing on a stone along the edge, continually tilting up and down, now chattering as it flies rapidly along the stream, again alighting into the water, in which it wades with the greatest facility. Its flight is remarkably swift and well sustained, and in manner is very unusual, the bird propelling itself by a rapid buzzing of the wings, following in its flight every undulation in the course of the stream into which it drops suddenly. Its song is described as remarkably sweet and lively in modulation resembling somewhat that of the *Harporhynchus rufus*, but less powerful, though sweeter in effect.

Dr. E. Baldamus, of Halle, who possesses specimens of the eggs of this species, describes them as pure white in color, oval in shape, and hardly distinguishable from those of the European *C. aquaticus*.

A nest of this bird obtained by Mr. J. Stevenson, of Hayden's Expedition, in Berthoud's Pass, Colorado, is a hemisphere of very uniform contour built on a rock, on the edge of a stream. Externally it was composed of green moss, in a living state; within is a strong, compactly built apartment, arched over, and supported by twigs, with a cup-like depression at the bottom, hemispherical and composed of roots and twigs firmly bound together. The structure is 7 inches in height externally, and has a diameter of $10\frac{1}{2}$ inches at the base. Within, the cavity has a depth of 6 inches; the entrance, which is on one side, is $3\frac{1}{2}$ in breadth by $2\frac{1}{2}$ in height. The eggs were three in number, uniform, dull white, and unspotted. They measure 1.04 inches by .70. They have an elongated oval shape, and are much pointed at one end.

FAMILY **SAXICOLIDÆ**. — THE SAXICOLAS.

The general characters of this family have already been given on p. 2, as distinguished from the *Turdidæ*. The relationships are very close, however, and but little violence would be done by making it a subfamily of *Turdidæ* or even a group of *Turdinæ*, as was done in the "Birds of North America."

While the group is very well represented in the Old World, America has but one peculiar genus *Sialia*, and another *Saxicola*, represented by a single species, a straggler, perhaps, from Greenland on the one side and Siberia on the other. The diagnostic characters of these are as follows, including *Turdus* to show the relationships of the three genera: —

Turdus. Tarsi long, exceeding the middle toe; wings reaching to the middle of the tail, which is about four fifths the length of the wings. Bill stout; its upper outline convex toward the base. Second quill shorter than fifth.

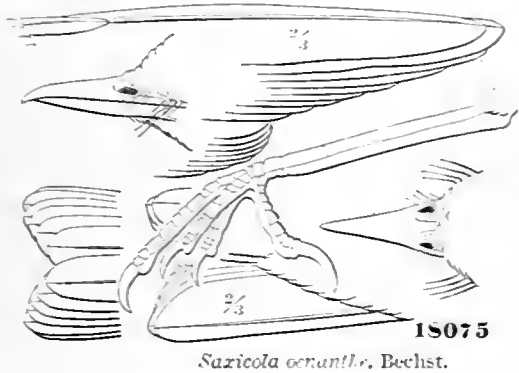
Saxicola. Tarsi considerably longer than the middle toe, which reaches nearly to the tip of the tail. Tail short, even; two thirds as long as the lengthened wings, which reach beyond the middle of the tail. Second quill longer than fifth. Bill attenuated; its upper outline concave towards the base.

Sialia. Tarsi short; about equal to the middle toe. Wings reaching beyond the middle of the tail. Bill thickened.

GENUS **SAXICOLA**, BECHSTEIN.

Saxicola, BECHSTEIN, Gemeinnützige Naturg. 1802. (Type, *S. œnanthe*.)

GEN. CHAR. Commissure slightly curved to the well-notched tip. Culmen concave for the basal half, then gently decurving. Gouys straight. Bill slender, attenuated; more than half the length of head. Tail short, broad, even. Legs considerably longer than the head; when outstretched reaching nearly to the tip of tail. Third quill longest; second but little shorter. Claws long, slightly curved; hind toe rather elongated.



As already stated, America possesses but a single member of this group of birds, so well represented in the Old World. The color is bluish-gray, with

wings, a stripe through the eye, and the middle of exposed tail-feathers black.

Saxicola œnanthe, BECHST.**THE WHEAT-EAR.**

Motacilla œnanthe, LINN. Syst. Nat. 1, 1758, 186. *Saxicola œnanthe*, BECHST. "Gemein. Naturg. 1802," and of European authors. — HOLBÖLL, Orn. Grøn. (Paulsen ed.), 1846, 23 (Greenland). — BAIRD, Birds N. Am. 1858, 220 (Europe); Review, 61. — JONES, Nat. Bermuda, 1859, 28 (Bermuda). — COLES, Pr. A. N. S. 1861, 218 (Labrador). — REINHARDT, Ibis, 1861, 5 (Greenland). — DALL & BANNISTER (Alaska). *Saxicola œnanthoides*, VIGORS, Zool. Blossom, 1839, 19 (N. W. America). — CASSIN, Ill. 1, 1854, 208, pl. xxxiv (Nova Scotia).

SP. CHAR. (Description from European specimen.) Male in spring, forehead, line over the eye, and under parts generally white; the latter tinged with pale yellowish-brown, especially on the breast and throat. A stripe from the bill through, below, and behind the eye, with the wings, upper tail-coverts, bill and feet, black. Tail white, with an abrupt band of black (about .60 of an inch long) at the end, this color extending further up on the middle feather. Rest of upper parts ash-gray; quills and greater coverts slightly edged with whitish. Length, 6.00; wing, 3.45; tail, 2.50; tarsus, 1.05.

Autumnal males are tinged with rusty; the black markings brown. The female in spring is reddish-gray; lores and cheeks brown; the black markings generally brownish, and not well defined. Eggs pale light blue. Nest on ground.

HAB. An Old World species (Europe, Northern Africa, and Asia), abundant in Greenland, found probably as an autumnal migrant in Labrador, Canada, Nova Scotia, Bermuda, etc. Occurs also on Norton Sound, near Behring's Straits. Very occasional in the Eastern States: Long Island.

This bird appears to be abundant in Norton Sound, from which region Mr. Dall has recently brought specimens in full spring plumage. These are decidedly smaller than birds

from Labrador and Greenland, but not distinguishable, and seem to agree precisely with skins from Central Europe.

HABITS. The well-known Wheat-ear is entitled to a place in our fauna, not only as an accidental visitor, but also as an occasional resident. Dr. H. R. Storer, of Boston, found them breeding in Labrador in the summer of 1848, and procured specimens of the young birds which were fully identified



Saxicola œnanthe

by Dr. Samuel Cabot as belonging to this species. In the following year Andrew Downs, of Halifax, gave me the specimen described and figured

by Mr. Cassin. This was secured late in the summer near Cape Harrison, Labrador, where it had evidently just reared its brood. In 1860 Mr. Elliott Coues obtained another specimen on the 25th of August, at Henley Harbor. It was in company with two others, and was in immature plumage. Its occurrence in considerable numbers on the coast of Labrador is further confirmed by a writer ("W. C.") in "The Field," for June 10, 1871, who states that when in that region during the months of May and June he saw a number of "White Ears," the greater proportion of them being males. He inferred from this that they breed in that country, the apparent scarcity of females being due to their occupation in nesting. Mr. Lawrence has one in his cabinet from Long Island, and the Smithsonian Institution one from Quebec. Specimens have also been obtained in the Bermudas.

Holböll, in his paper on the fauna of Greenland, is of the opinion that the individuals of this species that occur there come from Europe, make their journey across the Atlantic without touching at Iceland, and arrive in South Greenland as early in the season as it does at the former place, the first of May. It reaches Godhaven a month later, at times when all is snow-bound and the warmth has not yet released the insects on which it feeds. It is found as far north as the 73d parallel, and even beyond. In September it puts on its winter dress and departs.

Mr. Dall states that several large flocks of this species were seen at Nulato, May 23 and 24, 1868, and a number of specimens obtained. They were said to be abundant on the dry stony hill-tops, but were rare along the river.

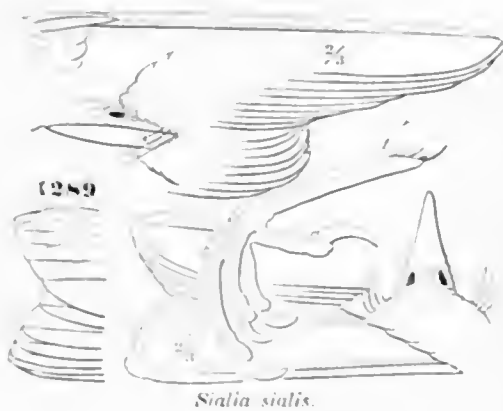
The Wheat-ear is one of the most common birds of Europe, and is found, at different seasons, throughout that continent as well as in a large portion of Western Asia. It breeds throughout the British Islands as well as in the whole of Northern Europe and Asia.

Its food is principally worms and insects, the latter of which it takes upon the wing, in the manner of a fly-catcher. The male bird is said to sing prettily, but not loudly, warbling even when on the wing, and hovering over its nest or over its partner. In confinement its song is continued by night as well as by day.

The Wheat-ear begins to make its nest in April, usually concealing it in some deep recess beneath a huge stone, and often far beyond the reach of the arm. Sometimes it is placed in old walls, and is usually large and rudely constructed, made of dried bents, scraps of shreds, feathers, and rubbish collected about the huts, generally containing four pale blue eggs, uniform in color, and without spots, which measure .81 of an inch in length by .69 in breadth.

GENUS **SIALIA**, SWAINSON.*Sialia*, SWAINSON, Zool. Jour. III, Sept. 1827, 173. (Type *Motacilla sialis*, L.)

GEN. CHAR. Bill short, stout, broader than high at the base, then compressed; slightly notched at tip. Rictus with short bristles. Tarsi not longer than the middle toe. Claws considerably curved. Wings much longer than the tail; the first primary spurious, not one fourth the longest. Tail moderate; slightly forked. Eggs plain blue. Nest in holes.



The species of this genus are all well marked, and adult males are easily distinguishable. In all, blue forms a prominent feature. Three well-marked species are known, with a fourth less distinct. The females are duller in

color than the males. The young are spotted and streaked with white.

Synopsis of Species.

COMMON CHARACTERS. Rich blue above, duller in the female. Beneath reddish or blue in the male, reddish or light drab in the female. Young with wings and tails only blue, the head and anterior parts of body with numerous whitish spots.

A. Breast reddish, or chestnut.

1. *S. sialis*. No chestnut on the back; throat reddish; abdomen and crissum white.

Blue of a rich dark purplish shade. Tail about 2.75. *Hab.* Eastern Province United States, Cuba, and Bermudas . . . var. *sialis*.

Blue of a greenish shade. Tail about 3.20. *Hab.* East Mexico and Guatemala . . . var. *azurca*.¹

2. *S. mexicana*. Chestnut, in greater or less amount, on the back; throat blue; abdomen and crissum blue. *Hab.* West and South Middle Province United States, south to Jalapa, Cordova, and Colima.

B. Breast blue (light drab in ♀).

3. *S. arctica*. Entirely rich greenish-blue; abdomen white. *Hab.* Middle Province United States; Fort Franklin, British America.

Sialia sialis, BAIRD.

EASTERN BLUEBIRD.

Motacilla sialis, LINN. S. N. 1758, 187 (based on CATESBY, I, pl. xlvii). *Sialia sialis*, BAIRD, Birds N. Am. 1858, 222; Rev. 62. — BOARDMAN, Pt. Bost. Soc. 1862, 124 (Calais, Me.; very rare). — DRESSER, Ibis, 1865, 465 (Texas, winter). — SAMUELS, B. N. Eng., 175. *Sialia wilsoni*, SWAINSON, Zool. Jour. III, 1827, 173. — CAB. JOUR. 1858, 120. — GUNDLACH, Cab. Jour. 1861, 324; Repertorio, 1865, 230. — JONES,

¹ *S. azurca*, BAIRD, Rev. Am. Birds, 1864, 62. (*S. azurca*, SWAINSON.)

Nat. Bermuda, 1859, 28, 66 (resident in Bermuda). *Sylvia sialis*, LATH.; *Ampelis sialis*, NUTT.; *Erythræa wilsoni*, SW.

Figures: VIEILLOT, Ois. Am. Sept. II, pl. ci, cii, ciii. — WILS. I, pl. iii. — AUD. Orn. Biog. II, pl. cxiii. — IB. B. A. II, pl. cxxxiv. — DOUGHTY, Cab. I, pl. xii.

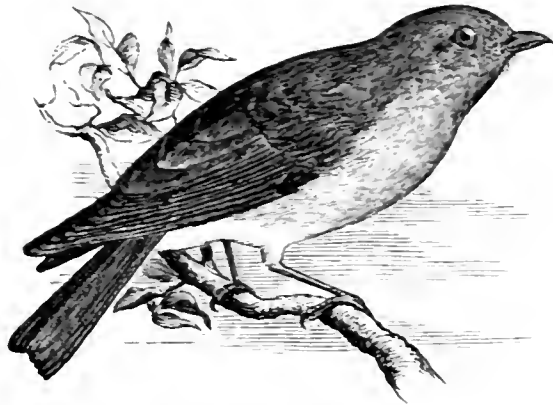
SP. CHAR. Entire upper parts, including wings and tail, continuous and uniform azure-blue; the cheeks of a duller tint of the same. Beneath reddish-brown; the abdomen, anal region, and under tail-coverts white. Bill and feet black. Shafts of the quills and tail-feathers black. Female with the blue lighter, and tinged with brown on the head and back. Length, 6.75; wing, 4.00; tail, 2.90.

Young. Males of the year dull brown on head and back; and lesser coverts streaked, except on head, with white. Throat and fore part of breast streaked with white. Tertials edged with brown. Rest of coloration somewhat like adult.

HAB. Eastern United States; west to Fort Laramie, Milk River; north to Lake Winnipeg; resident in Bermuda; Cuba (rare). GUNDELACH.

A specimen from Guatemala (50,411♂, Van Patten) referrible to the var. *azuræ* is undistinguishable in color from North American examples; the wings and tail are longer, however, measuring respectively 4.20 and 3.00.

HABITS. The Bluebird is abundant throughout the eastern portion of North America, breeding in nearly every part, from Georgia and Louisiana to the Arctic regions, with only this exception, that near the seaboard its migrations do not extend so far to the north as in the interior. It is very rarely to be met with beyond the Penobscot, although Professor Verrill mentions it as very common in the western part of Maine. It is found throughout the year in the Bermudas, and occasionally in Cuba. The Selkirk Settlement is the most northern locality to which it has been traced. It is not known to occur farther west than the highlands west of the Mississippi.



Sialia sialis.

Through all the Eastern States the Bluebird is one of the most familiar and welcome of the earliest visitors of spring, usually making its appearance as early as the first of March. In mild seasons they come in the latter part of February, long before there is any apparent relaxation of the severity of winter. In 1857, in consequence of the unusual mildness of the season, Bluebirds appeared in large numbers as early as the 15th of February, and remained apparently without suffering any inconvenience, although the weather subsequently became quite severe. In 1869 their first appearance was observed as early as the 28th of January, the earliest period of which I can find any record.

In the Middle States, with every mild winter's day, the Bluebirds come

out from their retreats, and again disappear on the return of severer weather. Later in the season, or early in March, they return and make a permanent stay.

When well treated, as the Bluebirds almost universally are, they return year after year to the same box, coming always in pairs. The marked attentions of the male bird are very striking, and have been noticed by all our writers. He is very jealous of a rival, driving off every intruder of his own species who ventures upon the domain he calls his own. Occasionally the pair suffer great annoyance from vexatious interferences with their domestic arrangements by the house wren, who unceremoniously enters their homestead, despoils it of its carefully selected materials, and departs. At other times the wren will take possession of the premises and barricade the entrance, making the return of its rightful owners impossible.

The song of the Bluebirds is a low warble, soft and agreeable, repeated with great constancy and earnestness, and prolonged until quite late in the season. Just before their departure, late in October, the sprightliness of their song nearly ceases, and only a few plaintive notes are heard instead.

The food of the Bluebird consists principally of the smaller coleopterous insects, also of the larvae of the smaller lepidoptera. In the early spring they are very busy turning over the dry leaves, examining the trunks and branches of trees, or ransacking posts and fences for the hiding-places of their prey. In the fall their food partakes more of a vegetable character.

The Bluebird selects as a suitable place for its nest a hollow in the decayed trunk of a tree, or boxes prepared for its use. Their early arrival enables them to select their own site. The nest is loosely constructed of soft materials, such as fine grasses, sedges, leaves, hair, feathers, etc. These are rarely so well woven together as to bear removal. The eggs are usually five and sometimes six in number. There are usually three broods in a season. Before the first brood are able to provide for themselves, the female repairs her nest and commences incubation for a second family. The young birds are, however, by no means left to shift for themselves. The male bird now shows himself as devoted a parent as in the earlier spring he had proved himself an attentive mate. He watches over the brood even after the second family appears and claims his attention. We often find him dividing his cares in the latter part of the season with two broods, and at the same time supplying his mate with food, and occasionally taking her place on the nest.

The eggs of the Bluebird are of a uniform pale blue, measuring about .81 of an inch in length by .62 in breadth.

In Guatemala is found a local race differing in its lighter under colors and in the greenish tinting of its blue (*S. azurea*). The *S. sialis* is also found in the more open districts of the elevated regions where it is numerous. It is there known as "*El azulajo*."

Sialia mexicana*, SWAINS.*CALIFORNIA BLUEBIRD.**

Sialia mexicana, Sw. F. B. Am. II, 1831, 202. — SCLATER, P. Z. S. 1856, 293 (Cordova); 1857, 126 (California); 1859, 362 (Xalapa). — IB. Catal. 1861, 11. no. 66. — BAIRD, Birds N. Am. 1858, 223; Review, 63. — COOPER & SUCKLEY, P. R. R. XII, II, 1859, 173. — COOPER, Birds Cal. I, 28. *Sialia occidentalis*, TOWNS., AUD. ; *Sialia arulco-collis*, VIGORS.

Figures: AUD. B. A. II, pl. cxxxv. — IB. Orn. Biog. V, pl. ccxciii. — VIGORS, Zool. Beechey's, Voy. 1839, pl. iii.

SP. CHAR. Bill slender. Head and neck all round, and upper parts generally bright azure blue. Interseapular regions, sides and fore part of the breast, and sides of the belly, dark reddish-brown. Rest of under parts (with tail-coverts) pale bluish, tinged with gray about the anal region. Female duller above; the back brownish; the blue of the throat replaced by ashy-brown, with a shade of blue. Length, 6.50; wing, 4.25; tail, 2.90.

Young. Tail and wing as in adult; head, neck, back, and breast, dull brown; each feather, except on the crown, streaked centrally with white.

HAB. Western United States, from the Rocky Mountains to Pacific. Not noticed on the Missouri plains. Central British America, or at Cape St. Lucas. Found at Xalapa and Cordova, Mex., SCLATER. Popocatepetl (Alpine region), SEMICHRIST.

As in the others, the colors of this species are much duller in fall and winter. No. 53,319, ♂ (Carson City, Nevada, Feb. 21) differs from others in the following respects: there is hardly any chestnut on the back, there being only just a tinge along each side of the interseapular region; that on the breast is interrupted in the middle, and thrown into a patch on each side of the breast, thus connecting the blue of the throat and abdomen; the blue of the throat is unusually deep.

HABITS. This Bluebird belongs to western North America, its proper domain being between the Rocky Mountains and Pacific, from Mexico to Washington Territory. Mr. Nuttall first met with this species among the small rocky prairies of the Columbia. He speaks of its habits as exactly similar to those of the common Bluebird. The male is equally tuneful throughout the breeding-season, and his song is also very similar. Like the common species he is very devoted to his mate, alternately feeding and caressing her and entertaining her with his song. This is a little more varied, tender, and sweet than that of the Eastern species, and differs in its expressions.

Nuttall describes this as an exceedingly shy bird, so much so that he found it very difficult to obtain a sight of it. This he attributes to the great abundance of birds of prey. Afterwards, in the vicinity of the village of Santa Barbara, Mr. Nuttall again saw them in considerable numbers, when they were tame and familiar.

Dr. Cooper states that these Bluebirds seem to prefer the knot-holes of the oaks to the boxes provided for them. He does not confirm Mr. Nuttall's description of its song, which he regards as neither so loud nor so sweet as

that of the Eastern species. He describes it as a curious performance, sounding as if two birds were singing at once and in different keys.

Many of this species remain in Washington Territory during the winter, where Dr. Cooper met with them in December. They associated in flocks, frequented roadsides and fences, and fed upon insects and berries.

Dr. Gambel found this species throughout the Rocky Mountains, and always in company with the *Sialia arctica*, being by far the more abundant species.

Dr. Kennerly mentions finding this species very abundant during his march up the Rio Grande. Through the months of November, December, and January they were always to be seen in large flocks near small streams.

The Western Bluebird constructs a nest usually of very loose materials, consisting chiefly of fine dry grasses. These are not woven into an elaborate nest, but are simply used to line the hollows in which the eggs are deposited. Near San Francisco Mr. Hepburn found a pair making use of the nest of the *Hirundo lunifrons*. On another occasion the Bluebirds had not only taken possession of the nest of this swallow, but actually covered up two fresh eggs with a lining of dry grasses, and laid her own above them.

The eggs, usually four in number, are of uniform pale blue of a slightly deeper shade than that of the *S. sialis*. They measure .87 of an inch in length by .69 in breadth.

Dr. Cooper's subsequent observations of this species in California enabled him to add to his account of it in his report on the birds of that State. He found it abundant in all the wooded districts, except high in the mountains, and thinks they reside through the summer even in the hot valley of the Rio Grande, where he found them preparing a nest in February. On the coast they are numerous as far north as the 49th parallel. He found a nest under the porch of a dwelling-house at Santa Barbara, showing that, like our Eastern species, they only need a little encouragement to become half domesticated. They raise two broods in a season, the first being hatched early in April.

At Santa Cruz he found them even more confiding than the Eastern species, building their nests even in the noisiest streets. One brood came every day during the grape season, at about noon, to pick up grape-skins thrown out by his door, and was delightfully tame, sitting fearlessly within a few feet of the open window.

In regard to their song Mr. Ridgway states that he did not hear, even during the pairing season, any note approaching in sweetness, or indeed similar to, the joyous spring warble which justly renders our Eastern Bluebird (*S. sialis*) so universal a favorite.

The two Western species of *Sialia*, though associating during the winter in the region along the eastern base of the Sierra Nevada, are seldom seen together during the breeding-season; the *S. arctica* returning to the higher portions of the thinly wooded desert mountains, while the *S. mexicana* remains in the lower districts, either among the cottonwoods of the river valleys or among the pines around the foot-hills of the Sierra.

Sialia arctica*, SWAINS.*ROCKY MOUNTAIN BLUEBIRD.**

Erythraca (Sialia) arctica, SWAINS. F. B. A. II, 1831, 209, pl. xxxix. *Sialia arctica*, NUTTALL, Man. II, 1832, 573. — BAIRD, Birds N. Am. 1858, 224; Rev. 64. — SCLATER, Catal. 1861, 11, no. 67. — DRESSER, Ibis, 1865, 478. (Texas, winter, very abundant.) — COOPER, Birds Cal. I, 29. *Sialia macroptera*, BAIRD, Stansbury's Rept. 1852, 314 (larger race with longer wings).

SP. CHAR. Greenish azure-blue above and below, brightest above; the belly and under tail-coverts white; the latter tinged with blue at the ends. Female showing blue only on the rump, wings, and tail; a white ring round the eye; the lores and sometimes a narrow front whitish; elsewhere replaced by brown. Length, 6.25; wing, 4.36; tail, 3.00. (1875.)

Young. Male birds are streaked with white, as in *S. sialis*, on the characteristic ground of the adult.

HAB. Central table-lands of North America, east to mouth of Yellowstone. One individual collected at Fort Franklin, Great Bear Lake. Not common on the Pacific slope; the only specimens received coming from Simlahmoo, Fort Crook, and San Diego. Not recorded as found in Mexico. W. Arizona, COVES.

As already stated, the blue of this species is greener, more smalt-like than in *sialis*. The females are distinguished from those of the other species by the greener blue, entire absence of rufous, and longer wings.

In autumn and winter the blue of the male is much soiled by amber-brown edges to the feathers, this most conspicuous on the breast, where the blue is sometimes almost concealed; the plumage of the female, too, at this season is different from that of spring, the anterior lower parts being soft isabella-color, much less grayish than in spring.

HABITS. This Bluebird belongs chiefly to the Central fauna, and occupies a place in the Eastern only by its appearance on its borders. It was first procured by Sir John Richardson, at Fort Franklin, in July, 1825. It is abundant throughout the central table-lands of North America, between the Pacific and the mouth of the Yellowstone, from Great Bear Lake to the lower portions of California. In the latter State it is not common.

Mr. Nuttall met with this species in the early part of June, northwest of Laramie Fork. The female uttered a low complaint when her nest was approached. This was constructed in a hole in a clay cliff. Another was found in the trunk of a decayed cedar. In one of these the young were already hatched. The nest was composed of dried grasses, but in very insignificant quantity. Mr. Nuttall found them much more shy than the common species, and describes them as feeding in very nearly the same manner. He afterwards found a nest of the same species in a cliff of the Sandy River, a branch of the Colorado. Both parents were feeding their brood. The female was very uneasy at his approach, chirping, and at intervals uttering a plaintive cry. He states that the male bird has a more plaintive

and monotonous song than that of the common Bluebird, and that it has the same warbling tone and manner. He afterwards observed the same species in the winter, at Fort Vancouver, associating with the Western Bluebird.

Dr. Woodhouse found the Arctic Bluebird quite common in the vicinity of Santa Fé, in New Mexico, where they breed about the houses in boxes put up for them by the inhabitants for the purpose.

Mr. Townsend found this species in the vicinity of the Platte River, near the Black Hills, and also on the banks of the Columbia. They confined themselves to the fences in the neighborhood of settlements, occasionally lighting upon the ground and scratching for minute insects. He describes their song as a delightful warble. Its notes resemble those of the common Bluebird, but are so different as to be easily recognized; they are equally sweet and clear, but have much less power.

Neither Dr. Gambel nor Dr. Heermann found this species in California excepting during the winter, and were of the opinion that none remain there to breed.

Dr. Kennerly observed them at different points among the Rocky Mountains, where they frequented the vicinity of his camp early in the morning, at some times in pairs and at others in flocks of four or five.

Mr. J. K. Lord states that he found this Bluebird very abundant between the Cascades and the Rocky Mountains, where they arrive in June and leave in September. After nesting they assembled in large flocks, and fed on the open plains.

The eggs are of a very light blue, paler than those of the other species. They measure .89 of an inch in length by .66 in breadth.

Mr. Ridgway states that he found the Rocky Mountain Bluebird nesting in Virginia City in June. Its nests were built about the old buildings, and occasionally in the unused excavations about the mines. At Austin he also found it common in July, in similar localities. On the East Humboldt Mountains it was very numerous, especially on the more elevated portions, where it nested among the rocks and, though more rarely, in the deserted excavations of woodpeckers in the stunted piñon and cedar trees. He describes it as generally very shy and difficult to obtain, seldom permitting a very near approach. In its habits it is much less arboreal than either *S. mexicana* or *S. sialis*, always preferring the open mountain portions in the higher ranges of the Great Basin.

In regard to its notes Mr. Ridgway says: "The common note of this species would, from its character, be at once recognized as that of a Bluebird. Its autumnal note, however, lacks entirely the peculiar plaintiveness so characteristic of that of our Eastern species, and is much more feeble, consisting of a simple weak *chup*. Like the *S. mexicana*, the *S. arctica* was also never heard to give utterance to anything resembling the lovely spring warbling of the *S. sialis*."

FAMILY SYLVIIDÆ. — THE SYLVIAS.

CHAR. Bill much shorter than head, slender, broad, and depressed at the base, distinctly notched and decurved at the tip. Culmen sharp-ridged at base. Frontal feathers reaching to the nostrils, which are oval, with membrane above, and overhung — not concealed — by a few bristles or by a feather. Rictal bristles extending beyond nostrils. Tarsi booted or scutellate. Basal joint of middle toe attached its whole length externally, half-way internally. Primaries ten; spurious primary about half the second, which is shorter than the seventh. Lateral toes equal.

The birds of this family are readily distinguished from the *Paridæ* by the slender bill, notched and decurved at tip; much bristled gape, sharp-ridged culmen, exposed oval nostrils, less adherent toes, etc. They are much smaller than the *Turdidæ* and *Saxicolidæ*, with much more slender, depressed bill, longer rictal bristles, etc. The short outer primary, with the primaries ten in number, distinguish them from the *Sylvicolidæ*.

The following synopsis will serve to characterize the American forms of their respective subfamilies. The species are all among the most diminutive in size with the exception of the Humming-Birds: —

A. Wings longer than the nearly even and emarginate tail. Scutellæ of tarsus scarcely or not at all appreciable. General color olivaceous above. No white on tail.

Nostrils naked. Scutellæ distinct on inner face of tarsus only. Head plain.

Sylviinæ.

Nostrils overhung by bristly feathers. Scutellæ of tarsus not appreciable.

Head with a colored central crest *Regulinæ.*

B. Wings about equal to the graduated tail. Tarsal scutellæ distinct. Above bluish; tail with white spots or patches.

Nostrils uncovered. Head plain; either bluish or black above. *Polioptilinæ.*

SUBFAMILY SYLVIINÆ.

CHAR. Size and form of *Sylvicolinæ*, but with a spurious first primary about one third the second quill. Wings considerably longer than the nearly even or emarginate tail. Feathers of frontal region with bristly points; but not covering the nostrils. Tarsi scutellate anteriorly, but indistinct externally (Characters drawn with reference to the American form.)

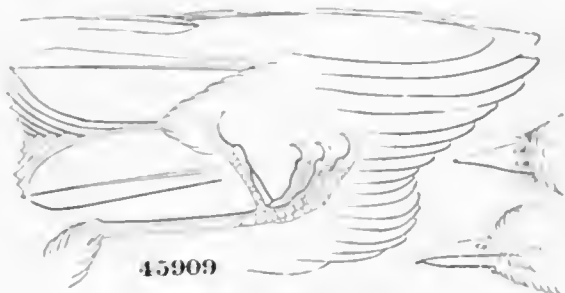
The introduction of this subfamily into the present work is required to accommodate a species of *Phyllopneuste* collected on the Yukon by the Russian Telegraph Expedition, the first known instance of the existence in North America of a group of birds characteristic of the northern parts of the Old World. Among the smallest of the class, they are eminently sociable, and feed entirely on insects, which they capture mostly on the wing, like fly-

catchers. The nest is placed on the ground, and is of an oval or spherical form with a round opening on one side. The sexes are similar, and the young differ very little from the parents.

GENUS **PHYLLOPNEUSTE**, MEYER & WOLF.

Phyllopneuste, MEYER & WOLF, Taschenbuch, 1822. — DEGLAND et GERBE, Ornith. Europ. 1, 1867, 543.

GEN. CHAR. Bill shorter than the head; straight, slender, and depressed, notched at tip. Nostrils open. Tarsi lengthened;



Phyllopneuste borealis.

exceeding the middle toe; sentellate anteriorly, but with the plates indistinct, claws short, much curved. Wings pointed, longer than tail, and reaching at least to its middle: spurious quill extending farther than the upper covert. Tail emarginate. Olivaceous above; yellowish or whitish beneath.

For the purpose of distinguishing this genus from any other North American, it is enough to say that, of the general appearance of the warblers, it has a short spurious first primary, as in the Thrushes, and some *Vireonidae*. The single species found as yet within our limits resembles at first sight an immature *Dendroica aestiva*, but is easily distinguished by the wing formula, the yellowish stripe over the eye, and the brown tail-feathers.



Phyllopneuste borealis.

Phyllopneuste borealis, BLAS.

ALASKA WILLOW WARBLER.

Phyllopneuste borealis, BLAS. Ibis, 1862, 69. *Phyllopneuste*, KESS., BAIRD, Trans. Chicago Acad. Sci. 1, ii, p. 313, pl. xxx, fig. 2, 1869.

SP. CHAR. (Description of specimen No. 45,909.) Plumage in August: above olive-green, with a slight shade of brown on top of head, rather lighter behind; beneath white, tinged with greenish-yellow; more olive on the throat and breast; and more yellow behind, inside the wing and on thighs; axillars purer yellow. A well-marked greenish-yellow line from nostrils over the eye to the nape (extending behind the eye nearly as far as from eye to tip of bill), beneath this an olivaceous streak through the eye, running into the mixed olive and yellowish of the cheeks. Quills and tail-feathers brown, edged with olivaceous; the outer edges of primaries more yellowish than those of secondaries; the greater coverts tipped externally with greenish-yellow, so as to form a distinct band

across the wing. Bill rather dark brown; paler beneath. Legs dark olive; toes not sensibly different. Nest probably on ground, and domed. Eggs white, spotted with pink.

Spurious quill in length about one fourth the second, which about equals the sixth, or very slightly exceeds it; third and fourth longest; fifth a little shorter.

Dimensions (fresh specimen before being skinned): total length, 4.75; expanse of wings, 6.00; wing from carpal joint, 2.50.

Dimensions (prepared specimen): total length, 4.60; wing, 2.40; tail, 2.00. Exposed portion of first primary, 0.42; of second, 1.56; of longest (measured from exposed base of first primary), 1.85. Bill: length from above, 0.38; from nostril, 0.29; along gape, 1.55. Legs: tarsus, 0.66; middle toe and claw, 0.55; claw alone, 0.16; hind toe and claw, 0.36; claw alone, 0.20.

HAB. Northeast Asia (China, East Siberia); adjacent to Behring's Straits and Alaska.

This species, in general appearance, apparently comes nearer to *P. trochilus* than to any other of its congeners. It is, however, more olivaceous-green above, and more yellow beneath, and has a distinct band across the wing. The superciliary light stripe is more distinct and longer; the bill and legs are darker, and the toes not sensibly different in color from the tarsus. The proportion of the quills is much the same, except that the interval between the tips of the fifth and sixth quills is greater, and the second is almost inappreciably longer than the latter, not reaching nearly midway between the two. The first or spurious quill is rather shorter.

A single specimen of this species was obtained August 16, 1866, on St. Michael's Island, in Norton Sound, Alaska, by Mr. Charles Pease. Mr. Bannister met with no other specimen in that locality, and from this it is inferred that this is not an abundant species there. It was described as a new species under the name of *P. kennicottii* (Baird), but has been ascertained by Mr. Tristram, to whom it was sent for examination, (*Ibis*, 1871, p. 231,) to be identical with *P. borealis* of Blasius.

Dr. Blasius also states (*Naumannia*, 1858, p. 303) that a specimen of this species has been obtained on the island of Heligoland, showing it to be also an accidental visitant to Western Europe.

HABITS. Mr. R. Swinhoe, who describes this among the birds of Formosa as *P. sylvicultrix*, states it to be a summer visitant to Southern China, passing in large numbers through Amoy in its autumnal migrations southeastward, probably to the Philippine Islands, touching at Southwestern Formosa and Twaiwanfoo, where he found them abundant. This was for a few days in October, but he neither saw any before nor afterwards, nor did he meet with any at Tamsuy (*Ibis*, 1863, p. 307). The same writer (*Ibis*, 1860, p. 53) speaks of this bird as very abundant in Amoy during the months of April and May, but passing farther north to breed.

We have no information in reference to its habits, and nothing farther in regard to its distribution. As it bears a very close resemblance to the Willow Wren of Europe, *P. trochilus*, it is quite probable that its general habits, nest, and eggs will be found to correspond very closely with those of that bird.

The European warblers of the genus *Phyllopucuste* are all insect-eating birds, capturing their prey while on the wing, and also feeding on their larvæ. They frequent the woodlands during their breeding-season, but at all other times are much more familiar, keeping about dwellings and sheep-folds.

The *P. trochilus* is a resident throughout the entire year in Southern Europe and in Central Asia. That species builds at the foot of a bush on the ground, and constructs a domed nest with the entrance on one side. Their eggs are five in number, have a pinkish-white ground, and are spotted with well-defined blotches of reddish-brown, measuring 0.65 by 0.50 inch, and are of a rounded oval shape.

SUBFAMILY REGULINÆ.

CHAR. Wings longer than the emarginated tail. Tarsi booted, or without scutellar divisions.

This subfamily embraces but a single well-defined North American genus.

GENUS REGULUS, CUV.

Regulus, CUV. "Leçons d'Anat. Comp. 1799, 1800." (Type *Motacilla regulus*, LINN.)

Reguloides, BLYTH. 1847. (Type "*R. proregulus*, PALL." GRAY.)

Phyllobusileus, CAB. Mns. Hein. 1, 1850, 33. (Type *Motacilla calendula*, LINN.)—*Cortylus*, CAB. Jour. Orn. 1, 1853, 83. (Same type.)

GEN. CHAR. Bill slender, much shorter than the head, depressed at base, but becoming rapidly compressed; moderately notched at tip. Culmen straight to near the tip, then gently curved. Commissure straight; gonys convex. Rictus well provided with bristles; nostril covered by a single bristly feather directed forwards (not distinct in *calendula*). Tarsi elongated, exceeding considerably the middle toe, and without scutellæ. Lateral toes about equal; hind toe with the claw, longer than the middle one by about half the claw. Claws all much curved. First primary about one third as long as the longest; second equal to fifth or sixth. Tail shorter than the wings, moderately forked, the feathers acuminate. Colors olive-green above, whitish beneath. Size very small.



We are unable to appreciate any such difference between the common North American *Regulus* as to warrant Cabanis in establishing a separate genus for the *calendula*. The bristly feather over the nostril is perhaps less compact and close, but it exists in a rudimentary condition.

The following synopsis will serve as diagnoses of the species : —

Head with entire cap in adult plain olivaceous, with a concealed patch of crimson.

Hab. Whole of North America; south to Guatemala; Greenland . . . *calendula*.

Head with forehead and line over the eye white, bordered inside by black, and within this again is yellow, embracing an orange patch in the centre of the crown. *Hab.* Whole of North America . . . *satrapa*.

Head with forehead and line through the eye black, bordered inside by whitish, and within this again by black, embracing an orange-red patch in the centre of the crown. *Hab.* Banks of Schuylkill River, Pennsylvania . . . *cuvieri*.

Regulus satrapa, LIGHT.

GOLDEN-CROWNED KINGLET.

Regulus satrapa, LIGHT. Verz. 1823, no. 410. — DALL & BANNISTER (Alaska). — LORD (Vancouver Isl.). — BAIRD, Birds N. Am. 1859, 227; Review, 65. — SCLATER, P. Z. S. 1857, 212 (Orizaba). — BEDEKER, Cab. Jour. IV, 33, pl. i, fig. 8 (eggs, from Labrador). — PR. MAX. Cab. Jour. 1858, 111. — COOPER & SUCKLEY, P. R. R. R. XII, 11, 1859, 174 (winters in W. Territory). — LORD, R. Art. Inst. Wool. 1864, 114 (nest?). — DRESSER, Ibis, 1865, 476 (Texas, winter). — SAMUELS, 179. — COOPER, Birds Cal. I, 32. *Sylvia regulus*, WILS.; *Regulus cristatus*, VIEILL.; *R. tricolor*, NUTT., AUD.

Figures: AUD. Birds Am. II, pl. cxxxii. — IB. Orn. Biog. II, pl. clxxxiii. — VIEILL. Ois. Am. Sept. II, pl. cvi.

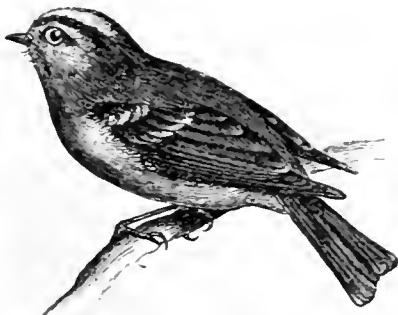
SP. CHAR. Above olive-green, brightest on the outer edges of the wing; tail-feathers tinged with brownish-gray towards the head. Forehead, a line over the eye and a space beneath it, white. Exterior of the crown before and laterally black, embracing a central patch of orange-red, encircled by gamboge-yellow. A dusky space around the eye. Wing-coverts with two yellowish-white bands, the posterior covering a similar band on the quills, succeeded by a broad dusky one. Under parts dull whitish. Length under 4 inches; wing, 2.25; tail, 1.80. *Female* without the orange-red central patch. Young birds without the colored crown.

HAB. North America generally. On the west coast, not recorded south of Fort Crook. Orizaba, SCLATER; W. Arizona, COUES.

Specimens of this bird from the far West are much brighter and more olivaceous above; the markings of the face are also somewhat different in showing less dusky about the eye. These may form a variety *olivaceus*.

The *Regulus cristatus* of Europe, a close ally of our bird, is distinguished by having shorter wings and longer bill; the flame-color of the head is more extended, the black border is almost wanting anteriorly. The back and rump, too, are more yellow.

HABITS. The Golden-crested Kinglet, or Wren, as it is often called, occurs over nearly the whole of the North American continent. It is abundant from the Atlantic to the Pacific, and throughout the British Provinces, where



Regulus satrapa.

it chiefly occurs in its breeding-season. In Massachusetts it is a winter resident from October until May. In Maine it is met with in spring and fall, chiefly as a migratory visitor; a few also remain, and probably breed, in the dense *Thuja* swamps of that State. They are most abundant in April, and again in October. In the vicinity of Calais the Golden-crest is a common summer resident, and, without doubt, breeds there.

Dr. Woodhouse mentions finding this species in abundance in New Mexico and Texas, associated with Nuthatches and Titmice. Dr. Cooper found it abundant in Washington Territory, particularly in the winter, and ascertained positively that they breed there, by seeing them feeding their young near Puget Sound, in the month of August. According to Mr. Ridgway it is much less numerous in the Great Basin than the *R. calendula*.

The food of this lively and attractive little bird during the summer months is almost exclusively the smaller winged insects, which it industriously pursues amid the highest tree-tops of the forest. At other seasons its habits are more those of the titmice, necessity leading it to ransack the crevices of the bark on the trunks and larger limbs of the forest-trees. It is an expert fly-catcher, taking insects readily upon the wing.

But little is known with certainty regarding its breeding-habits, and its nest and eggs have not yet been described. The presumption, however, is that it builds a pensile nest, not unlike the European congener, and lays small eggs finely sprinkled with buff-colored dots on a white ground, and in size nearly corresponding with those of our common Humming-Bird. We must infer that it raises two broods in a season, from the fact that it spends so long a period, from April to October, in its summer abode, and still more because while Mr. Nuttall found them feeding their full-fledged young in May, on the Columbia, Dr. Cooper, in the same locality, and Mr. Audubon, in Labrador, observed them doing the same thing in the month of August.

According to the observations of Mr. J. K. Lord, this species is very common on Vancouver's Island and along the entire boundary line separating Washington Territory from British Columbia, where he met with them at an altitude of six thousand feet. He states that they build a pensile nest suspended from the extreme end of a pine branch, and that they lay from five to seven eggs. These he does not describe.

Most writers speak of this Kinglet as having no song, its only note being a single chirp. But in this they are certainly greatly in error. Without having so loud or so powerful a note as the Ruby-crown (*R. calendula*), for its song will admit of no comparison with the wonderful vocal powers of that species, it yet has a quite distinctive and prolonged succession of pleasing notes, which I have heard it pour forth in the midst of the most inclement weather in February almost uninterruptedly, and for quite an interval.

Bischoff obtained a large number of this species at Kodiak, and also at Sitka, where it seemed to replace the Ruby-crown.

Regulus cuvieri, AUD.**CUVIER'S KINGLET.**

Regulus cuvieri, AUD. Orn. Biog. I, 1832, 288, pl. lv, etc. — BAIRD, Birds N. Am. 1859, 228; Rev. Am. Birds, 66.

SP. CHAR. Size and general appearance probably that of *R. satrapa*. A black band on the forehead passing back, through and behind the eye, separated by a grayish band from another black band on the crown, which embraces in the centre of the crown an orange patch. Length, 4.25 inches; extent of wings, 6.

HAB. "Banks of Schuylkill River. Penn. June, 1812." AUD.

This species continues to be unknown, except from the description of Mr. Audubon, as quoted above. It appears to differ mainly from *R. satrapa* in having two black bands (not one) on the crown anteriorly, separated by a whitish one; the extreme forehead being black instead of white, as in *satrapa*. The specimen was killed in June, 1812, on the banks of the Schuylkill River, in Pennsylvania.

Regulus calendula, LIGHT.**RUBY-CROWNED KINGLET.**

Motacilla calendula, LINN. Syst. Nat. I, 1766, 337. *Regulus calendula*, LIGHT. Verz. 1823, no. 408. — BAIRD, Birds N. Am. 1858, 226; Rev. 66. — SCLATER, P. Z. S. 1857, 202. — IB. 1858, 300 (mountains of Oaxaca). — IB. 1859, 362 (Xalapa). — IB. 1864, 172 (City of Mex.). — SAMUELS, 178. — DALL & BANNISTER (Alaska). — COOPER, Birds Cal. I, 33. — IB. Ibis, I, 1859, 8 (Guatemala). — COOPER & SUCKLEY, P. R. R. XII, II, 1859, 174. — REINHARDT, Ibis, 1861, 5 (Greenland). — DRESSER, Ibis, 1865, 475 (Texas, winter). *Corthylio calendula*, CAB. Jour. Orn. I, 1853, 83 (type of genus). *Regulus rubineus*, VIEILL. Ois. Am. Sept. II, 1807, 49, pl. civ, cv.

Other figures: WILS. Am. Orn. I, 1808, pl. v, fig. 3. — DOUGHTY, Cab. II, pl. vi. — AUD. Orn. Biog. II, pl. cxv. — IB. Birds Am. II, pl. cxxxiii.

SP. CHAR. Above dark greenish-olive, passing into bright olive-green on the rump and outer edges of the wings and tail. The under parts are grayish-white tinged with pale olive-yellow, especially behind. A ring round the eye, two bands on the wing-coverts, and the exterior of the inner tertials white. *Male*. Crown with a large concealed patch of scarlet feathers, which are white at the base. *Female* and young without the red on the crown. Length, 4.50; wing, 2.33; tail, 1.85.

HAB. Greenland; whole of North America, and south to Guatemala. Oaxaca (high region, November), SCLATER. Xalapa and Guatemala, SCLATER.

This species of *Regulus* appears to lack the small feather which, in *satrapa*, overlies and conceals the nostrils, which was probably the reason with Cabanis and Blyth for placing it in a different genus. There is no other very apparent difference of form, however, although this furnishes a good character for distinguishing between young specimens of the two species.

HABITS. Much yet remains to be learned as to the general habits, the

nesting, and distribution during the breeding-season of the Ruby-crowned Kinglet. It is found, at varying periods, in all parts of North America, from Mexico to the shores of the Arctic seas, and from the Atlantic to the Pacific; and, although its breeding-places are not known, its occurrence in the more northern latitudes, from Maine to the extreme portions of the continent, during the season of reproduction, indicate pretty certainly its extended distribution throughout all the forests from the 44th parallel northward. None of our American ornithologists are known to have met with either its eggs or its nest, but we may reasonably infer that its nest is pensile, like that of its European kindred, and from being suspended from the higher branches, from its peculiar structure and position has thus far escaped observation.

In the New England States they are most abundant in the months of October and April. A few probably remain in the thick evergreen woods throughout the winter, and in the northern parts of Maine they are occasionally found in the summer, and, without doubt, breed there. In the damp swampy woods of the islands in the Bay of Fundy, the writer heard their remarkable song resounding in all directions throughout the month of June.

The song of this bird is by far the most remarkable of its specific peculiarities. Its notes are clear, resonant, and high, and constitute a prolonged series, varying from the lowest tones to the highest, terminating with the latter. It may be heard at quite a distance, and in some respects bears more resemblance to the song of the English Skylark than to that of the Canary, to which Mr. Audubon compares it.

Their food appears to be chiefly the smaller insects, in pursuit of which they are very active, and at times appear to be so absorbed in their avocation as to be unmindful of the near presence of the sportsman or collector, and unwarned by the sound of the deadly gun. They are also said by Wilson to feed upon the stamens of the blossoms of the maple, the apple, peach, and other trees. Like the other species, they are expert insect-takers, catching them readily on the wing. They are chiefly to be met with in the spring among the tree-tops, where the insects they prefer abound among the expanding buds. In the fall of the year, on their return, they are more commonly met with among lower branches, and among bushes near the ground.

Although presumed to be chiefly resident, during the summer months, of high northern regions, Wilson met with specimens in Pennsylvania during the breeding-season; and it is quite probable that they may occur, here and there, among the high valleys in the midst of mountain ranges, in different parts of the country.

In the winter it is most abundant in the Gulf States, and especially in that of Louisiana. Dr. Woodhouse found it quite abundant throughout Texas, New Mexico, and the Indian Territory. Dr. Cooper found it in Washington Territory, but did not there meet with it in summer. Dr.

Suckley, however, regarded it as a transient visitor, rather than a winter resident of that region, and far more abundant from about the 8th of April to the 20th of May, when it seemed to be migrating, than at any other time.

Dr. Kennerly found these birds in abundance near Espia, Mexico, and afterwards, during January, among the Aztec Mountains, and again, in February, along the Bill Williams Fork. He describes them as lively, active, and busy in the pursuit of their insect food. They seem to be equally abundant at this season in California, Arizona, and Colorado.

Mr. Ridgway found them common in June and July among the coniferous woods high upon the Wahsatch Mountains in Utah, and has no doubt that they breed there.

Mr. Dall found this species abundant at Nulato, Alaska, in the spring of 1868, preferring the thickets and alder-bushes away from the river-bank. They appeared very courageous. A pair that seemed about to commence building a nest in a small clump of bushes tore to pieces one half finished, belonging to a pair of *Scolecophagus ferrugineus*, and, on the blackbirds' return, attacked the female and drove her away. This was early in June, and Mr. Dall was compelled to leave without being able to witness the sequel of the contest.

A straggling specimen of this bird was taken in 1860 at Nenortatik, in Greenland, and sent in the flesh to Copenhagen.

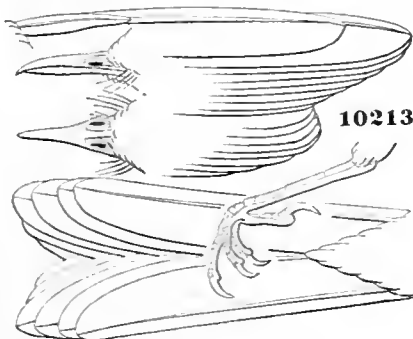
SUBFAMILY POLIOPTILINÆ.

The characters of this subfamily will be found on page 69.

GENUS POLIOPTILA, SCLAT.

Polioptila, SCLATER, Pr. Zoöl. Soc. 1855, 11. (Type, *Motacilla cærulea*.)

CHAR. Bill slender, attenuated, but depressed at the base; nearly as long as the head, distinctly notched at the tip, and provided with moderate rictal bristles. Nostrils rather elongated, not concealed, but anterior to the frontal feathers. Tarsi longer than the middle toe, distinctly scutellate; the toes small; the hinder one scarcely longer than the lateral; its claw scarcely longer than the middle. Outer lateral toe longer than the inner. First primary about one third the longest; second equal to the seventh. Tail a little longer than the wings, moderately graduated; the feathers rounded. Nest felted and covered with moss or lichens. Eggs greenish-white, spotted with purplish-brown.



Polioptila cærulea.

The species all lead-color above; white beneath, and to a greater or less

extent on the exterior of the tail, the rest of which is black. Very diminutive in size (but little over four inches long).

Synopsis of Species.

Top of head plumbeous.

Two outer tail-feathers entirely white. A narrow frontal line, extending back over the eye, black. *Hab.* North America *P. cærulea*.
Outer tail-feather, with the whole of the outer web (only), white. No black on the forehead, but a stripe over the eye above one of whitish. *Hab.* Arizona.

P. plumbea.

Top of head black.

Edge only of outer web of outer tail-feather white. Entire top of head from the bill black. *Hab.* Rio Grande and Gila *P. melanura.*

Species occur over the whole of America. One, *P. lembeyi*, is peculiar to Cuba, and a close ally of *P. cærulea*.

Polioptila cærulea, SCLAT.

BLUE-GRAY GNATCATCHER; EASTERN GNATCATCHER.

Motacilla cærulea, LINN. Syst. Nat. I, 1766, 337 (based on *Motacilla parva cærulea*, EDW. tab. 302). *Culicivora cærulea*, CAB. Jour. 1855, 471 (Cuba). — GUNDLACH, Repert. 1865, 231. *Polioptila cærulea*, SCLATER, P. Z. S. 1855, 11. — BAIRD, Birds N. Am. 1858, 380. — IN. Rev. 74. — DRESSER, Ibis, 1865, 231. — COOPER, Birds Cal. I, 35. *Motacilla cana*, GM. S. N. I, 1788, 973. *Culicivora mexicana*, BON. Consp. 1850, 316 (not of CASSIN), female. *Polioptila mexicana*, SCLATER, P. Z. S. 1859, 363, 373.
Figures: VIEILL. Ois. II, pl. lxxxviii. — WILSON, Am. Orn. II, pl. xviii, fig. 3. — AUD. Orn. Biog. I, pl. lxxxiv; IN. Birds Am. I, pl. lxx.

SP. CHAR. Above grayish-blue, gradually becoming bright blue on the crown. A narrow frontal band of black extending backwards over the eye. Under parts and lores bluish-white tinged with lead-color on the sides. First and second tail-feathers white except at the extreme base, which is black, the color extending obliquely forward on the inner web; third and fourth black, with white tip, very slight on the latter; fifth and sixth entirely black. Upper tail-coverts blackish-plumbeous. Quills edged externally with pale bluish-gray, which is much broader and nearly white on the tertials. Female without any black on the head. Length, 4.30; wing, 2.15; tail, 2.25. (Skin.)

HAB. Middle region of United States, from Atlantic to Pacific, and south to Guatemala; Cape St. Lucas. Cuba, GUNDLACH and BRYANT. Bahamas, BRYANT.

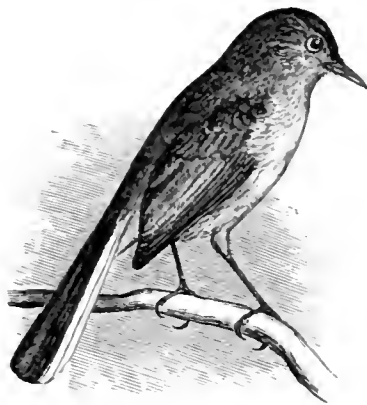
HABITS. The Blue-gray Flycatcher is a common species from the Atlantic to the Pacific coast, although not met with in the New England States. It is less abundant on the coast than at a distance from it, and has a more northern range in the interior, being met with in Northern Ohio, Michigan, and the British Provinces. Specimens occur in the Smithsonian Institution collection from New York to Mexico and Guatemala, and from Washington Territory to California.

They appear in Pennsylvania early in May, and remain there until the last of September. They are observed in Florida and Georgia early in

March, but are not known to winter in that latitude. All the specimens in the Smithsonian collection were obtained between April and October, except one from Southern California, which was taken in December.

Near Washington, Dr. Cones states the Blue-gray Gnatcatcher to be a summer resident, arriving during the first week of April, and remaining until the latter part of September, during which time they are very abundant. They are said to breed in high open woods, and, on their first arrival, to frequent tall trees on the sides of streams and in orchards.

In California and Arizona this species occurs, but is, to some extent, replaced by a smaller species, peculiarly western, *P. melanura*. There they seem to keep more about low bushes, hunting minute insects in small companies or in pairs, and their habits are hardly distinguishable from those of Warblers in most respects.



Poliophtila caerulea.

The food of this species is chiefly small winged insects and their larvæ. It is an expert insect-catcher, taking its prey on the wing with great celerity. All its movements are very rapid, the bird seeming to be constantly in motion as if ever in quest of insects, moving from one part of the tree to the other, but generally preferring the upper branches.

Nuttall and Audubon, copying Wilson, speak of the nest of this Gnatcatcher as a very frail receptacle for its eggs, and as hardly strong enough to bear the weight of the parent bird. This, however, all my observations attest to be not the fact. The nest is, on the contrary, very elaborately and carefully constructed; large for the size of the bird, remarkably deep, and with thick, warm walls composed of soft and downy materials, but abundantly strong for its builder, who is one of our smallest birds both in size and in weight. Like the nests of the Wood Pewee and the Humming-Bird, they are models of architectural beauty and ingenious design. With walls made of a soft felted material, they are deep and purse-like. They are not pensile, but are woven to small upright twigs, usually near the tree-top, and sway with each breeze, but the depth of the cavity and its small diameter prevent the eggs from rolling out. Externally the nest is covered with a beautiful periphery of gray lichens, assimilating it to the bark of the deciduous trees in which it is constructed.

Occasionally these nests have been found at the height of ten feet from the ground, but they are more frequently built at a much greater elevation, even to the height of fifty feet or more. They are made in the shape of a truncated cone, three inches in diameter at the base and but two at the top, and three and a half inches in height. The diameter of the opening is an inch and a half. In Northern Georgia they nest about the middle of May, and are so abundant that the late Dr. Gerhardt would often find

not less than five in a single day, and very rarely were any of them less than sixty feet from the ground. Dr. Gerhardt, who was an accurate and careful observer, speaks of these as the best built nests he had met with in this country, both in regard to strength and its ingeniously contrived aperture, so narrowed at the top that it is impossible for the eggs to roll out even in the severest wind. They have two broods in the season in the Southern States, one in April and again in July.

This Flycatcher lays usually five eggs. These are of a short oval form, somewhat pointed at one end and rounded at the other, and measure .56 of an inch in length by .44 in breadth. Their ground-color is a greenish-white, marked and dotted with small blotches and spots of varying and blending shades of reddish-brown, lilac, and slate.

Polioptila plumbea, BAIRD.

LEAD-COLORED GNATCATCHER; ARIZONA GNATCATCHER.

Polioptila plumbea, BAIRD, PR. A. N. SC. VII, June, 1854, 118. — IB. BIRDS N. AM. 1858, 382, pl. xxxiii, fig. 1; Review, 74. — COOPER, BIRDS CAL. I, 37.

SP. CHAR. Above bluish-gray; the forehead uniform with the crown. Eyelids white. A pale grayish-white line over the eye, above which is another of black, much concealed by the feathers, and which does not reach to the bill. Lower parts dull white, tinged with bluish on the sides and with brownish behind. Tail-feathers black; the first and second edged and tipped with white, involving the entire outer web of the first, and most of that of the second; the third with only a very faint edging of the same. Female duller, without the black superciliary line. Length, 4.40; wing, 1.80; tail, 2.30 (7.189).

HAB. Arizona.

This species differs from *P. carulea*, in having the ash above less bluish, especially on the forehead; the black superciliary streak is only a horizontal bar, not reaching the bill, whereas in *carulea* it not only reaches the bill, but also extends across the forehead; the light superciliary stripe is more distinct. The tail is entirely different, the lateral feathers being almost entirely black, instead of the reverse.

From immature specimens of *P. melanura* it may be distinguished by larger size and purer white lower parts, and greater amount of white on outer webs of lateral tail-feathers.

HABITS. But little is known in regard to the distribution or history of this species. It appears to be peculiar to Arizona and Mexico. There is no good reason to suppose that it differs materially in any of its habits from the other species of this genus. Dr. Cooper, who observed this species at Fort Mojave, states that it is a winter resident of that region in small numbers; and, so far as he observed, is undistinguishable either in habit or general appearance from either of the other species which at that season are also found there. Its cry of alarm resembles that of the common wren.

Polioptila melanura, LAWR.**BLACK-CAPPED GNATCATCHER.**

Culicivora atricapilla, LAWRENCE, Ann. N. Y. Lyc. V, Sept. 1851, 124 (not of SWAINSON).
Culicivora mexicana, CASSIN, Illust. I, 1854, 164, pl. xxvii (not of BON.). *Polioptila melanura*, LAWRENCE, Ann. N. Y. Lyc. VI, Dec. 1856, 168. — BAIRD, Birds N. Am. 1858, 382; Review, 68. — HEERMANN, P. R. R. vol. X (Williamson), 1859, 39. — COOPER, Birds Cal. I, 37.

SP. CHAR. Above plumbeous-blue. Whole crown, to bill and eyes, with tail, lustrous blue-black. Beneath pale bluish-gray, almost white on chin and anal region; the flanks and crissum tinged with brown. Edge of eyelids, and margin and tip of outer web of first and second lateral tail-feathers, white. Female and young without the black of the crown. Length, 4.15; wing, 1.85; tail, 2.10.

HAB. San Diego to Fort Yuma and Cape St. Lucas. Arizona, COES.

Specimens of this species from Cape St. Lucas differ from those of San Diego described in the P. R. R. Report (7,191) in having the whole of the outer web of the outer tail-feather white, and in a rather larger white tip. The colors beneath are a little less ashy, though not of a pure white. The ash of the back is rather lighter and purer. The lores are rather lighter. The first primary is a little larger and broader.

It is possible that the restriction of the white of the outer web of the exterior tail-feather to the outer half only is an unusual circumstance, as both Mr. Cassin and Mr. Lawrence, in their descriptions, speak of the entire outer web being white, — the second feather being of the former character. Under these circumstances there will be little specific difference between the tails of *P. melanura* and *plumbea*. The female birds will then be separated by the light superciliary line and much shorter tarsi of *P. plumbea*, — the latter measuring .63 instead of nearly .70 of an inch.

HABITS. This species was first noticed as belonging to the North American fauna by Captain McCown, who obtained it near Ringgold Barracks in 1850. It has since been noticed at Fort Yuma and at San Diego, and obtained in greater abundance at Cape St. Lucas. It is also found in Mexico. Dr. Cooper says that it is common all winter both at San Diego and at Fort Mohave. It has been traced as far north as latitude 30° in the Sierra Nevada. Its song he describes as a harsh ditty of five parts, something like a wren's song, with notes like those of a swallow, and also closely resembling the song of *Vireo belli*. Their scolding note is a faint mew, like that of a cat.

The habits of this species appear to be not unlike those of the peculiar family to which it belongs. All its members are among our smallest birds, are almost exclusively inhabitants of woods, and resemble the *Reguli* in their restless activity in pursuit of the smallest insects on which they feed. This bird is described as particularly active, quick in its movements, search-

ing with great activity for its food, and preferring low trees and bushes. At times it will dart about in the air in pursuit of small insects.

Mr. John Xantus found these birds to be quite abundant at Cape St. Lucas, and obtained several of their nests. They were generally built among the interlacing tendrils of a wild vine (*Antigonon leptopus*), and so closely interwoven with the smaller branches as to be inseparable. The nests, like those of all this family, are structures of great beauty and delicacy. They have a height and an external diameter of about $2\frac{1}{4}$ inches. The cavity is $1\frac{1}{2}$ inches wide at the rim, and fully two inches deep. This great proportionate depth of the nest seems to be characteristic of this genus. The external portion of this nest is composed of a composite blending of various vegetable materials, fine hempen fibres of plants, strips of delicate bark from smaller shrubs, silken fragments of cocoons and downy cotton-like substance, all very closely impacted and felted together, somewhat after the manner of the Humming-Bird. The whole is very softly and warmly lined with a beautifully interwoven and silky fabric composed of the soft down of various plants.

The walls of the nest, though of the softest materials, are so thick and so firmly impacted as to make it a structure remarkably firm and secure against accidents.

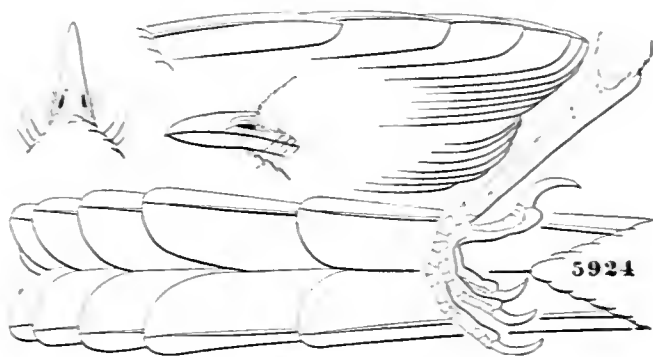
The eggs, four in number, measure .55 of an inch in length by .45 in breadth. They are of an oblong-oval shape, their ground-color is a pale greenish-white sprinkled over the entire surface with fine dottings of purple, reddish-brown, and black.

FAMILY CHAMÆADÆ. — THE GROUND-TITS.

CHAR. Bill compressed, short, rather conical, not notched nor decurved. Culmen sharp-ridged. Nostrils linear, with an incumbent scale. Rictal bristles reaching beyond nostrils, which are scantily overhung by bristly feathers. Loral feathers bristly and directed forwards. Tarsi booted, or covered with a continuous plate anteriorly, with faint indications of scutellæ on the inner side. Basal joint of middle toe attached for about half its length on either side. Primaries ten; sixth quill longest. Plumage very lax.

We have found it impossible to assign the genus *Chamæa* to any recognized family of American birds, and have accordingly been obliged to give it independent rank in this re-

spect, although it may properly belong to some Old World group with which we are not acquainted. In its general appearance it approaches the *Paridæ* in loose plumage, bristly lores, want of notch to bill, etc.; but differs in the very much bristled rictus, sharp-ridged culmen, linear nostrils, booted tarsi, less amount of adhesion of the toes, etc.



Chamæa fasciata.

It approaches the *Sylviidæ* in the sharp-ridged culmen and bristly gape, but is otherwise very different. The excessively rounded wing is a peculiar feature, the sixth primary being the longest.

The family may, perhaps, be best placed between the *Sylviidæ* and *Paridæ*.

This family has but one representative (*Chamæa fasciata*), and this confined to the coast region of California. The characters of the genus are those of the family.



Chamæa fasciata.

GENUS CHAMÆA, GAMBEL.

Chamæa, GAMBEL, Pt. A. N. Sc. Phil. III, 1847, 154. (Type, *Parus fasciatus*.)

But one species of this genus has as yet been described.

Chamæa fasciata, GAMB.**GROUND-TIT; WREN-TIT.**

Parus fasciatus, GAMBEL, Pr. A. N. Sc. Aug. 1845, 265 (California). *Chamæa fasciata*, GAMBEL, Pr. A. N. Sc. 111, 1847, 154. — Ib. J. A. N. Sc. 2d series, 1, 1847, 34, pl. viii, fig. 3. — CARANIS, Wiegmann's Archiv, 1848, 1, 102. — CASSIN, Illust. 1, 1853, 59, pl. vii. — BAIRD, Birds N. Am. 1858, 370. — Ib. Review, 76. — COOPER, Birds Cal. 1, 39.

SP. CHAR. Wings scarcely two thirds the length of the tail; both very much graduated. Upper and outer parts generally (including the whole tail) olivaceous-brown, tinged with gray on the head; beneath pale brownish-cinnamon, with obsolete streaks of dusky on the throat and breast. Sides and under tail-coverts tinged with olive-brown. Lores and a spot above the eye obscurely whitish. Tail-feathers with obsolete transverse bars. Total length, 6.20; wing, 2.30; tail, 3.50, graduation, 1.20; exposed portion of first primary, .85, of second, 1.30, of longest, sixth (measured from exposed base of first primary), 1.80; length of bill from forehead, .52, from nostril, .30; along gape, .60; tarsus, 1.05; middle toe and claw, .78; claw alone, .23; hind toe and claw, .55; claw alone, .30. Eggs light blue, unspotted; nest on low bushes.

HAB. Coast region of California.

HABITS. This very interesting species, which seems to combine within itself the principal characteristics of the Wren and the Titmouse, was first described by the late Dr. Gambel of Philadelphia. So far as is now known, it is confined to the coast country of California, from Fort Tejon to the shore and from San Diego to the Sacramento. Dr. Gambel's attention was first directed to it by the continued sound of a loud, crepitant, grating scold which he was constantly hearing in fields of dead mustard-stalks and other similar places. He at last discovered it to be this species, which from its peculiar habits he called a Wren-tit. It kept close to the ground, was difficult to be seen, and eluded pursuit by diving into the thickest bunches of weeds, uttering, when approached, its peculiar grating wren-like notes. When quietly watched it could be seen to search for insects, climbing twigs and dry stalks sideways, jerking its long tail, or holding it erect in the manner of a wren, which, in this position, it very much resembles. He describes it as at times uttering a slow, monotonous singing note like a chick-a-dee, represented by *pee-pee-pee-pee*. At other times its song is a varied succession of whistling. In spring it was heard, in pairs, calling and answering, in a less solemn strain, and in a manner not unlike a sparrow, with a brief *pit-pit-pit*, ending with a prolonged trill. If disturbed, they at once resumed their usual scolding cries.

Mr. Bell found this species chiefly frequenting damp places, and speaks of it as of pert habit, and not easily frightened. Its white iris, when observed in its native retreats, makes it easily recognized. This feature is as conspicuous in this bird as it is in the White-eyed Vireo. Its skin is remarkably strong, the muscles of the thighs powerful and well developed, and its whole muscular system exhibits an unusual strength and firmness.

Dr. Cooper's observations in regard to this bird are a little different in some respects. He found it common everywhere west of the Sierra Nevada on dry plains and hillsides, among the shrubby undergrowth, but not in the forests. Instead of preferring damp places, he found it living where there is no water, except occasional fogs, for six or eight months at a time. Their movements can be observed by patient watching and keeping perfectly quiet, when they seem attracted by curiosity to such a degree as to approach one within a few feet, and fearlessly hop round him as if fascinated.

Dr. Cooper found their nests near San Diego built about three feet from the ground in low shrubs. They were composed of straw and twigs mixed with feathers and firmly interwoven. The cavity, about two inches wide and an inch and three fourths deep, is lined with grass and hair. The eggs, three or four in number, are of a pale greenish-blue, and measure .70 by .52 of an inch.

FAMILY **PARIDÆ**. — THE TITMICE.

CHAR. Bill generally short, conical, not notched nor decurved at tip. Culmen broad and rounded, not sharp-ridged at base. Nostrils rounded, basal, and concealed by dense bristles or bristly feathers. Loral feathers rough and bristly, directed forwards. Tarsi distinctly scutellate; basal joints of anterior toes abbreviated, that of middle toe united about equally for three fourths its length to the lateral: in *Parinæ* forming a kind of palm for grasping; outer lateral toe decidedly longer than the inner. Primaries ten, the first much shorter than the second. Tail-feathers with soft tips. Nest in holes of trees; eggs white, spotted with reddish.

With Cabanis we include the Nuthatches in the same family with the Titmice, and have prepared the above diagnosis to embrace both groups. They agree in having a conical bill, not notched nor decurved, with much rounded culmen, and nearly straight commissure, and rounded nostrils covered with dense bristles. These characters will readily distinguish them, in connection with the ten primaries, and tarsi with scutellæ on the anterior half only (as compared with *Alaudidæ*), from any other American *Oscines*.

The two subfamilies may be thus distinguished:—

Parinæ. Body compressed. Bill shorter than the head. Wings rounded, equal to or shorter than the rounded tail. Second quill as short as the tenth. Tarsus longer than the middle toe and claw, which are about equal to the hinder; soles of toes widened into a palm. Plumage rather soft and lax.

Sittinæ. Body depressed. Bill about equal to or longer than the head. Wings much pointed, much longer than the nearly even tail. Tarsus shorter than the middle toe and claw, which are about equal to the hinder. Plumage more compact.

SUBFAMILY **PARINÆ**.

The characters of the subfamily will be found sufficiently detailed above. The genera are as follows:—

Bill with curved outlines.

Head with a long pointed crest. Wings and tail rounded.

Body full and large. Tail about equal to wings *Lophophanes.*

Head with feathers full, but not crested. Wings and tail rounded.

Body full. Tail about equal to wings; rounded *Parus.*

Body slender. Tail much longer than wings; much graduated *Psaltiriparus.*

Bill with outlines nearly straight.

Head with compact feathers. Wings pointed.

Body slender. Tail rather shorter than the wings; nearly even *Auriparus.*

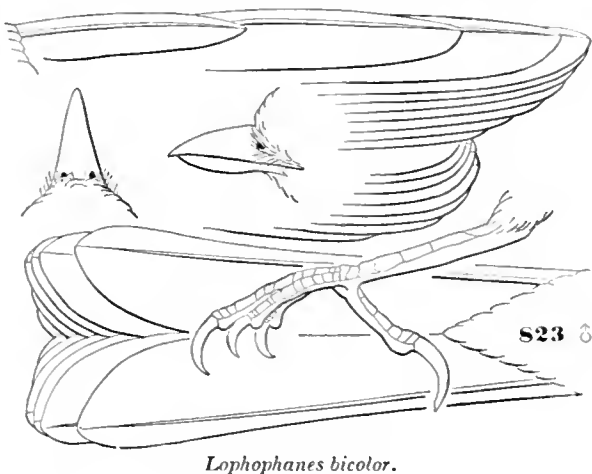
GENUS **LOPHOPHANES**, KAUP.

Lophophanes, KAUP, Entw. Gesch. Europ. Thierwelt, 1829. (Type, *Parus cristatus*.)

Psittolophus, CABANIS, Mus. Hein. 1850, 1851, 91. (Type, *Parus bicolor*, L.)

GEN. CHAR. Crown with a conspicuous crest. Bill conical; both upper and lower outlines convex. Wings graduated; first quill very short. Tail moderately long and rounded. Nests in hollow trees; eggs white with fine red dottings.

Of this genus there are several North American species, all agreeing in general characters. One of these, the *L. wollweberi*, is given by Cabanis as typical, while he separates the *L. bicolor* generically under the name of *Bæolophus*, as having a rather different form of crest, stouter bill and feet, and longer wings. All of our species, however, vary in these characters, each one showing a different combination, so that we prefer to consider all as belonging to the same genus with *P. cristatus*.



The species, all of which have the under parts uniform whitish, may be arranged as follows:—

L. bicolor. Above plumbeous; forehead black; crown much like the back. *Hab.* Eastern Province United States.

L. atricristatus. Above plumbeous; forehead whitish; crown black. *Hab.* East Mexico, north to Rio Grande.

L. inornatus. Above olivaceous; forehead and crown like the back. *Hab.* South of Middle and Western Provinces of United States.

L. wollweberi. Sides of head banded black and white; crown ash; throat black. *Hab.* S. Rocky Mountains of United States; Mexico to Oaxaca.

Lophophanes bicolor, BONAP.

TUFTED TITMOUSE; BLACK-FRONTED TITMOUSE.

Parus bicolor, LINN. Syst. Nat. 12th ed. I, 1766, 340 (based on *Parus cristatus*, CATESBY, I, pl. lvii). — PR. MAX. Cab. Jour. VI, 1858, 118. *Lophophanes bicolor*, BON. List Birds Europe, 1842. — BAIRD, Birds N. Am. 1858, 384; Review, 78. — SCLATER, Catal. 1861, 14, no. 87. *Bæolophus bicolor*, CAB. Mus. Hein. I, 1850, 91 (type of genus).

Lophophanes missouriensis, BAIRD, Birds N. Am. 1858, 384 (var. from Missouri River).

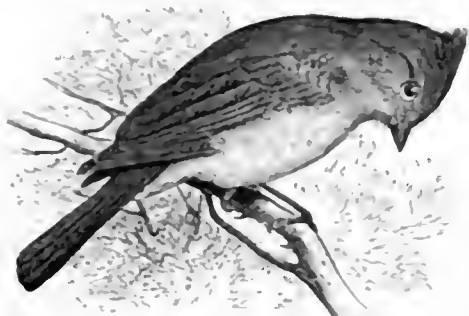
Figures: WILSON, Am. Orn. I, pl. viii, fig. 5. — AUD. Orn. Biog. I, pl. ccci; Ib. Birds Am. II, pl. cxxv.

SP. CHAR. Above ashy; a black frontal band. Beneath dull whitish; sides brownish-chestnut, of more or less intensity. Length, 6.25 inches; wing, 3.17.

HAB. United States, from Missouri Valley eastward.

Feathers of the crown elongated into a flattened crest, which extends back as far as the occiput. Bill conical; lower edge of upper mandible nearly straight at the base. Fourth and fifth quills equal; third a little shorter

than seventh; second rather shorter than the secondaries. Tail nearly even, the outer about .20 of an inch shorter than the longest. Upper parts ash-color, with a tinge of olivaceous. Forehead dark sooty-brown. The



Lophophanes inornatus.

feathers of the upper part of the head and crest obscurely streaked with lighter brown. Under parts of head and body, sides of head, including auriculars, and a narrow space above the eye, dirty yellowish-white, tinged with brown; purest on the side of head, the white very distinct in the loreal region, and including the tuft of bristly feathers over the nostrils, excepting the tips of those in contact with

the bill, which are blackish. The sides of the body and the under tail-coverts are tinged with yellowish-brown. The quills and tail-feathers are edged with the color of the back, without any whitish. Bill black. Feet lead-color.

Specimens from the West are larger, the colors all more strongly marked.

HABITS. The Tufted Titmouse is a common and well-known species in the Southern States, from the seaboard to the Rocky Mountains. Its northern limits are in Pennsylvania, Missouri, and Kansas. Farther north than this its occurrence appears to be only occasional and accidental. The statement of Mr. Audubon that they are found in the Northern States, even to Nova Scotia, was evidently a mistake. They do not occur in Massachusetts, nor, so far as I am aware, have they been met with in any part of New England.

They are abundant in Northern Georgia, where, according to the observations of Dr. Gerhardt, they are among the first birds to breed, having fledglings fully grown as early as the first of May. Dr. Woodhouse found them very common in the Indian Territory, but none of the other exploring parties met with it farther west, where it is replaced by its kindred species.

It is perhaps the most abundant bird in Southern Illinois, where it is resident, being excessively numerous in winter, and in that season often a positive nuisance from their impertinent vehement scolding as they appear to follow the hunter in troops through the woods. In winter it is a constant inhabitant of the door-yards and shrubbery, particularly fruit-trees in the towns, where it is associated with the Carolina Chickadee (*Parus carolinensis*) and other winter birds, but exceeding them all in familiarity and boldness. (Ridgway.)

Mr. Nuttall, who never met with this bird north of Pennsylvania, found it very common in the winter and spring in the Southern States, where it displayed all the habits and uttered the usual notes of the family. In the

dreariest solitudes of the Southern States these birds were his constant and amusing companions. Their sprightly movements and their varied musical talents made it even more peculiarly interesting at a time when all the other tenants of the forest were silent. The notes of this bird, which, when expressed by this writer on paper, seem only quaint and eccentric articulations, were characterized by him as lively, cheering, and varied, delivered with a delicacy, energy, pathos, and variety of expression to which it was far beyond the power of description to do justice.

These notes, at times, even partook of the high-echoing and clear tones of the Oriole. The usual song of this Titmouse is presented by Mr. Nuttall by the following characteristics: "*Whip-tom-killy-killy-dāy-dāy-dā-it-tshica-dēē-dce*," varied with "*Kāi-tee-did-did-did*," etc., etc. Later in the season, under the milder influences of spring, these Titmice pursued the insects from branch to branch, calling restlessly and with loud and echoing voices, *peto-peto-peto*, with frequent quaint variations too numerous to be repeated. Their song even consisted of successions of playful, pathetic, or querulous calls, never exhibiting any trills after the manner of the Warblers, yet the compass and tones of their voice, their capricious variety, and their general effect are described as quite as pleasing as the more exquisite notes of our summer songsters.

When wounded this Titmouse resists with great spirit any attempt to take him alive, but soon becomes tame and familiar in confinement, subsisting on seeds, broken nuts, etc. Impatient of restraint, it incessantly attempts to work its way out of its cage.

The general habits of these birds correspond closely with those of the large family to which they belong. They move usually in small flocks of from five to ten through the branches of trees and bushes in quest of insects, examine the cracks and crevices of the bark, hang on the under side of small branches, move sideways around the trunks of trees, probe the openings in acorns, pine-cones, nuts, etc., for its food, and retain apparently the family group until the spring, when they separate into pairs.

One of these birds kept in confinement by Dr. Bachman of Charleston was in the habit of hiding its food in the corner of its cage, in a small crevice, and of creeping at night into a small box, where it lay doubled up like a ball till the first light of the morning, when it resumed its restless habits.

The Tufted Titmouse passes its nights and days, when the weather is inclement, in the hollows of decayed trees or the deserted holes of the woodpeckers. In such places it also builds its nests. It has been known to excavate a hole for itself even in hard sound wood. Its nest is simply a rude lining of the selected cavity, composed of various soft and warm materials. In this are deposited from six to eight eggs. But a single brood is raised in a season. The young birds, as soon as they are fledged, hunt in company with their parents, and remain associated with them until the following

spring. The eggs of this bird have a length of .75 of an inch and a breadth of .56. They are of a rounded oval in shape, and are thickly sprinkled with fine rust-colored dots, intermingled with a few larger markings of lilac, on a white ground.

Lophophanes atricristatus, CASSIN.

BLACK-TUFTED TITMOUSE; TEXAS TITMOUSE.

Parus atricristatus, CASSIN, Pr. A. N. Sc. Phil. V, 1850, 103, pl. ii (Texas). *Lophophanes atricristatus*, CASSIN, Ill. Birds Texas, etc. I, 1853, 13, pl. iii. — BAIRD, Birds N. Am. 1858, 385; Review, 78. — COOPER, Birds Cal. I, 43.

SP. CHAR. Crest very long and pointed (1.25 inches). Above ash-colored. A broad band on the forehead dirty white, rest of head above, with crest, black, tinged with ash on the sides. Color of the back shading insensibly into the dull ashy-white of the under parts. Sides of body pale brownish-chestnut. Female with the crest duller black. Iris dark brown. Length, about 5.25 inches; wing, 3.00.

HAB. Valley of Rio Grande, south, into Mexico. San Antonio. Texas. Vera Cruz. SCLATER.

This species is not rare in Texas, where it has been noticed as far east as San Antonio.

HABITS. So far as known, the Black-crested Titmouse is restricted in its distribution to the valley of the Rio Grande, including portions of Mexico and Western Texas. It was first met with in the latter State by John W. Audubon, and described by Mr. Cassin in the Proceedings of the Philadelphia Academy.

In its general appearance and in all its habits it is mentioned as having so close a resemblance to the common Tufted Titmouse as to be hardly distinguishable from that bird. Dr. Woodhouse met with this species near San Antonio, Texas, in March, 1851. While his party was encamped on the Rio Salado he observed these birds busily engaged in capturing insects among the trees on the banks of the stream. Like all the members of this family, it was incessantly in motion and very noisy. Later in the season, on the 8th of May, the same party, when encamped on the Quihi, again found this species very abundant among the oaks. The young males, then fully grown, closely resembled the adult females, both wanting the black crest that distinguishes the mature male. He afterward noticed this species occurring at intervals along his route as far as the head waters of the Rio San Francisco in New Mexico. He observed it almost exclusively among the trees that bordered streams of water. The females and the young males invariably had crests of the same cinereous color as their general plumage, but in the latter slightly tinged with brown. They occurred in small parties, were very lively and sociable in their habits, and in their general appearance and even in their notes so very closely resembled the Eastern species as, at a short distance, to be hardly distinguishable from it.

Dr. Heermann, in his report on the birds of Lieutenant Parke's survey, mentions having first observed this species near Fort Clarke, in Texas, where it was very abundant. He describes it as sprightly and active in its movements, searching with great assiduity for insects in the crevices of the bark and among the branches of trees. While thus engaged it keeps up a chattering note, varied with an occasional low and plaintive whistle. Its habits appeared to him to resemble most those of the common *Parus atricapillus*. Dr. Heermann states that it builds its nest in the hollow of trees, and that it lays from twelve to sixteen eggs. He does not, however, say that he ever met with its eggs, nor does he give any description of them. The nest, he states, is composed of fine dry grasses, feathers, wool, mosses, etc.

General Couch's description of this species and its habits is very similar. He observed it in the province of New Leon, in Mexico, where he found it very abundant along the San Juan into the Sierra Madre. He describes it as a very lively bird, with a very perfect whistle of a single note.

Mr. Henry A. Dresser sought very diligently for its nest and eggs near San Antonio and Houston, in Texas, where he found the bird very common, and where he was sure many pairs remained to breed, but its nest was very hard to find, and the birds very wary. He succeeded in finding one nest, in a hollow tree, near the head springs of the San Antonio River, but it contained young. The nest he does not describe, nor does he mention the number of young it contained.

Lophophanes inornatus, CASSIN.

GRAY-TUFTED TITMOUSE; CALIFORNIA TITMOUSE.

Parus inornatus, GAMBEL, Pr. A. N. Sc. Phil. Aug. 1845, 265 (Upper California). — IB. J. A. N. Sc. new ser. I, 1847, 35, pl. vii. *Lophophanes inornatus*, CASSIN, Ill. 1853, 19. — BAIRD, Birds N. Am. 1858, 386; Review, 78. — SCLATER, Catal. 1861, 14, no. 88. — ELLIOT, Illust. I, pl. iii. — COOPER, Birds Cal. I. 42.

SP. CHAR. Crest elongated. Color above olivaceous-ashy, beneath whitish. Sides of body and under tail-coverts very faintly tinged with brownish, scarcely appreciable. Sides of head scarcely different from the crown. Forehead obscurely whitish. Length, 5 inches; wing, 2.55.

HAB. Southern United States, from Rocky Mountains to Pacific; Western Nevada (RIDGWAY). W. Arizona (COUES).

The bill and feet of this species are lead-color. The third, fourth, and fifth quills are longest; the third and eighth about equal; the second is shorter than the shortest primaries. The lateral tail-feathers are a little shorter than the others.

A specimen from Fort Thorn has the crest longer than in other specimens before me, measuring 1.35 inches from base of bill to its tip. This may be a characteristic of the male, the sexes being otherwise alike.

HABITS. The Gray Titmouse belongs essentially to the Pacific coast, coming eastward only as far as the banks of the Rio Grande in Texas. It was first discovered and described by Dr. Gambel, in his Birds of California. It has since been met with not only throughout California, but also in all the southern portions of the Rocky Mountains, in New Mexico, and from Mimbres to the Rio Grande.

Dr. Woodhouse met with this species in the San Francisco Mountains, near the Little Colorado River, New Mexico. He found it very abundant, feeding among the tall pines in company with the *Sitta pygmaea*, *S. aculeata*, and *Parus montanus*.

Dr. Gambel first noticed this species near Monterey on the 20th of November. It was flitting actively about among the evergreen oaks of that vicinity in company with large flocks of several kindred species. They were all in restless activity, searching every branch for insects. As well as he could distinguish its notes among those of the busy throng in the midst of which he observed it, they appeared to resemble very closely those of the common *P. atricapillus*. Upon his following it up, it would utter a loud scolding outcry, erect its high and pointed crest, and appear as angry as possible at the intrusion. He found it very common, frequenting tall bushes in small flocks, searching branches of low trees, uttering weak and slender cries, resembling the syllables *tsē dāy-dāy*.

Dr. Heermann found it one of the most common of the birds of California, where it is resident throughout the year. He describes their notes as possessing an almost endless variety, so much so that he was repeatedly prompted to follow it as a new species. He met with a nest of this bird in a deserted woodpecker's hole, which contained young.

Dr. Cooper has met with this species in February near San Diego, but not on the Colorado. They seem to prefer the evergreen-oak groves toward the middle of the State, but are not found in the higher Sierra Nevada. They are residents throughout the year in the evergreen oaks near San Francisco. He adds that they are seen in small parties, scattered about the trees, and calling to each other with a variety of sweet and loud notes, some of which are said to equal those of our best singers. It also has certain powers of imitation like the Eastern crested species and the same cry of *pēto-pēto*.

It feeds on acorns as well as insects, and often goes to the ground in search of them. It cracks the acorns with its bill, and hammers at bark and decayed wood with the industry of a woodpecker.

Mr. Ridgway met with this species among the pines of the eastern slope of the Sierra Nevada, but nowhere in abundance. Among the cedars it was almost the only bird seen. He describes its manners as greatly resembling those of the other species. Its notes, though differing from those of the Eastern *L. bicolor*, being weaker and less distinct, retain its vehement and characteristic manner of utterance.

Lophophanes wollweberi, BONAP.**WOLLWEBER'S TITMOUSE; STRIPED-HEADED TITMOUSE.**

Lophophanes wollweberi, BON. C. R. XXXI, Sept. 1850, 478. — WESTERMANN, Bijdr. Dierkunde, III, 1851, 15, plate. — BAIRD, Birds N. Am. 1858, 386, pl. liii, fig. 1; Review, 79. — SCLATER, P. Z. S. 1858, 299 (Oaxaca, high lands). — Ib. Catal. 1861, 14, no. 89. — COOPER, Birds Cal. I, 43. *Parus annexus*, CASSIN, Pr. A. N. Sc. V, Oct. 1850, 103, pl. i. *Lophophanes galeatus*, CABANIS, Mus. Hein. 1850, 1851, 90.

SP. CHAR. Central portion of crest ash, encircled by black, commencing as a frontal band, and passing over the eye. Chin, throat, and a line from behind the eye and curving round the auriculars to the throat (bordered behind by white), as also some occipital feathers, black. A white line from above the eye margining the crest, with the cheeks below the eye and under parts generally white. A black half-collar on the nape. Upper parts of body ashy. Length, about 4.50; wing, 2.50.

HAB. Southern Rocky Mountains of United States, and along table-lands through Mexico, to Oaxaca (high regions, SCLATER). Orizaba (Alpine regions, SUM.).

HABITS. Wollweber's Titmouse, so far as its distribution is known, is a bird of Western Texas, the high table-lands of Mexico, and of the whole of New Mexico. It was described by Bonaparte and by Cassin nearly simultaneously, in 1850. It bears a very close resemblance to the *Lophophanes cristatus* of Europe.

Although comparatively nothing is known in reference to the specific habits of this species, they may be very readily inferred from those of the other members of this genus, whose characteristics are all so well marked and so uniform. Dr. Kennerly is the only one of our naturalists who has mentioned meeting the species in its living form. In his Report upon the Birds of Lieutenant Whipple's Survey he states that he found it in the thick bushes along the Pueblo Creek. Wherever noticed it was constantly in motion, hopping from twig to twig in search of its food. He also found it among the pines of the Aztec Mountains. No mention is made of its nest or eggs, and its nidification remains to be ascertained.

GENUS PARUS, LINNÆUS.

Parus, LINNÆUS, Syst. Nat. 1735. (Type, *P. major*.)

GEN. CHAR. Head not crested. Body and head full. Tail moderately long, and slightly rounded. Bill conical, not very stout; the upper and under outlines very gently and slightly convex. Tarsus but little longer than middle toe. Head and neck generally black or brown, with sides white. Nest in holes. Eggs white, sprinkled with red.

In the group, as defined above, are embraced several genera of modern systematists. The true black-capped American Titmice belong to the section *Pæcile* of Kaup, and exhibit but three well-marked forms; one, *P. montanus*, with a white stripe over the eye; one, *atricapillus*, without it, with black

head; and one, *hudsonicus*, also without it, and with brown head. The species may be arranged as follows:—

1. *Head and neck, above and beneath, black; their sides white.*

A. A broad white stripe above the eye, meeting across forehead.

1. ***P. montanus*.** Edges of wing-coverts, secondaries, and tail scarcely paler than general tint above. Beneath ashy-whitish, medially. Wing, 2.85; tail, 2.50; bill (along culmen), .50; tarsus, .69; middle toe, .43; wing-formula, 4—5, 3—6, 7, 2; graduation of tail, .18. *Hab.* Mountain regions of Middle and Western United States.

B. No white stripe above the eye.

a. Tail as long as, or longer than, wing. Conspicuous white edgings to wing-coverts, secondaries, and tail-feathers.

2. ***P. atricapillus*.**

Dorsal region yellowish-cinereous, wings and tail purer ash; sides light ochraceous. White edgings of tail-feathers *not* margining their ends. Wing, 2.60; tail, 2.60; bill, .40; tarsus, .62; middle toe, .36; wing-formula, 4, 5, 6, 3, 7, 8, 2—9; graduation of tail, .30. (12,851 ♂. Brooklyn, N. Y.) *Hab.* Eastern Province of North America, north of about 39° var. *atricapillus*.

Dorsal region and sides with scarcely a perceptible yellowish tinge; white edgings of tail-feathers passing around their ends. Beneath whitish. Wing, 2.75; tail, 2.80; culmen, .35; tarsus, .65; middle toe, .40; wing-formula, 5, 4—6, 3—7, 8, 2—9; graduation of tail, .50. (3704 ♂? Salt Lake City, Utah.) *Hab.* Region of Missouri River and Rocky Mountains var. *septentrionalis*.

Colors as in *atricapillus*, but much darker. Beneath more ochraceous. Wing, 2.40; tail, 2.50; culmen, .40; tarsus, .60; middle toe, .40; wing-formula, 4th, 5th, and 6th equal, 3—7, 2—10; graduation of tail, .25. (6762 ♂? Fort Vancouver, Washington Territory.) *Hab.* Pacific Province of North America var. *occidentalis*.

b. Tail shorter than wing; no conspicuous white edgings to wings and tail.

3. ***P. meridionalis*.**¹ Beneath ashy (nearly dark as upper surface), whitish medially. Wing, 2.60; tail, 2.20; culmen, .40; tarsus, .63; middle toe, .40; wing-formula, 4, 5, 6, 3—7, 2—10; graduation of tail, .10. (10,203, Mexico.) *Hab.* Eastern Mexico.

4. ***P. carolinensis*.** Beneath pale soiled ochraceous-whitish, scarcely lighter medially. Wing, 2.55; tail, 2.30; culmen, .35; tarsus, .53; middle toe, .38; wing-formula, 5, 4, 6, 7, 3, 8, 2—9; graduation of tail, .10. (706 ♂, Washington, D. C.) *Hab.* Eastern Province of United States, south of about 40°.

2. *Head and neck, above and beneath, brown, the throat darkest; their sides white.*

C. Back, scapulars, rump, and sides rusty-chestnut.

5. ***P. rufescens*.** Side of neck pure white. Wing, 2.35; tail, 2.00; tarsus, .61; middle toe, .40. Tail scarcely graduated. *Hab.* Pacific coast of North America.

D. Back, etc., grayish or ochraceous brown.

6. ***P. hudsonicus*.** Side of neck grayish. Back, etc., smoky-gray.

¹ *Parus meridionalis*, SCLATER, P. Z. S. 1856, 293. BAIRD, Rev. 81.

Sides dark rusty-brown. Wing, 2.45; tail, 2.45; tarsus, .62; middle toe, .35; graduation of tail, .30. (17,101. Halifax, N. S.) *Hab.* Arctic America; south to northern boundary of the United States (except to westward).

7. *P. sibiricus*.¹ Side of neck white. Back, etc., rusty ochraceous-gray. Sides rusty ochraceous. Wing, 2.70; tail, 2.80; tarsus, .66; middle toe, .36; graduation of tail, .30. *Hab.* Europe.

Parus montanus, GAMBEL.

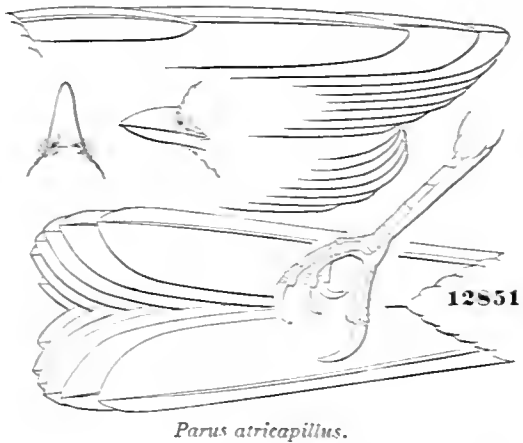
MOUNTAIN CHICKADEE: WHITE-BROWED CHICKADEE.

Parus montanus, GAMBEL. *Pr. A. N. S.* Phila. April, 1843, 259; *Journ. A. N. Sc.* 2d Series, I, 1847, 35, pl. viii, f. 1. — BAIRD, *B. N. A.* 1858, 394; *Review Am. B.* 1, 1864, 82. — ELLIOT, *Illust.* — COOPER, *Birds Cal.* I, 46.

SP. CHAR. Head and neck above, with under part of head and throat, glossy black; forehead, stripe above the eye and band below it, involving the auriculars, white. These stripes embracing between them a black band through the eye and confluent with the black of the head. Above ashy; beneath similar, but paler: the upper part of breast and middle line of belly white. Length about 5 inches; wing, 2.60; tail, 2.40.

HAB. Mountain region of Middle and Western United States.

HABITS. The Mountain Chickadee was first met with by Dr. Gambel in journeying westward from Santa Fé, in New Mexico, and from thence was found in all the ranges of the Rocky Mountains nearly to California. Its notes and habits are said to closely resemble those of the common Chickadee, but weaker and more varied. It keeps more in low bushes, where it moves from branch to branch with untiring activity, searching each minutely for small insects. It also frequently descends to the ground to pick up small seeds. While thus occupied it will occasionally stop, look round, and, uttering a slender *te-de-de*, and then its usual note, *to-le-de-dait*, will fly to another bush.



Parus atricapillus.

On the Rio Colorado they kept chiefly among the cotton-wood trees that grew along its banks, and its familiar notes were almost the only sounds heard. They were observed in large and busy flocks along the smaller streams in company with the Least Tit and the *Reguli*. Dr. Gambel did not find them, however, so abundant on the California sides of the ridge, where other species took their place.

Dr. Heermann found this Titmouse abundant among the mountains sur-

¹ *Parus sibiricus*, GMEL. *S. N.* 1788, p. 1013.

rounding the Volcano in the southern mines, and subsequently met with them on the summit of the Tejon Pass. He thinks their notes and habits very similar to those of the *atricapillus*. Dr. Suckley obtained a single specimen at Fort Dalles, but regarded it as extremely rare in that locality.



Parus montanus.

Dr. Woodhouse found it quite abundant in the San Francisco Mountains of New Mexico, where it was feeding among the tall pines in company with kindred species.

Mr. Ridgway found this species in great abundance among the pines on the eastern slope of the Sierra Nevada Mountains, as well as in all the extensive cedar-groves on the mountains to the eastward. Around Carson City this species was found throughout the winter.

In its manners and notes, particularly the latter, it was hardly distinguishable from *P. carolinensis*. The notes are described as louder and more distinct, though their calls in spring are rather less clearly articulated.

Parus atricapillus, LINN.

EASTERN CHICKADEE; BLACK-CAPPED TITMOUSE.

Parus atricapillus, LINN. Syst. Nat. 1, 1766, 341 (based on *Parus atricapillus canadensis*, BRISSON, III, 553, tab. xxix, fig. 1). — BAIRD, Birds N. Am. 1858, 390; Review, 80. — SELATER, Catal. 1861, 13, no. 80. — DALL & BANNISTER (Alaska). — SAMUELS, 182. *Picile atricapilla*, BON. Consp. 1850, 230. *Parus palustris*, NUTT. Man. 1, 1832, 79. Figured by AUDUBON, WILSON, etc.

SP. CHAR. Second quill as long as the secondaries. Tail very slightly rounded; lateral feathers about .10 shorter than middle. Back brownish-ashy. Top of head and throat black, sides of head between them white. Beneath whitish; brownish-white on the sides. Sides of outer tail-feathers, some of primaries, and secondaries conspicuously margined with white. Length, 5.00; wing, 2.50; tail, 2.50.

HAB. Eastern North America, north of 39th parallel.

In this species the first quill is spurious; the fourth quill is longest; the fifth and sixth successively a little shorter; the third is about equal to, or a little shorter than, the eighth; the second is a very little longer than the secondaries. The tail is a little rounded, the innermost feather longest, the rest successively a little shorter. The greatest difference in length of tail-feathers amounts to .30 of an inch.

The entire crown, from the bill to the upper part of the back, coming down on the sides to the lower level of the eye, is pure black, although the edge alone of the lower eyelid is of this color. A second black patch begins

at the lower mandible and occupies the entire under surface of the head and throat, but not extending as far back within a quarter of an inch as that on the upper part of the neck. The space between these two patches, on the sides of the head and neck, is white, this color extending along the black of the back of the neck as far as its truncated extremity, but not bordering it behind. The middle of the breast and belly, as far as the vent, is dull white, that immediately behind the black of the throat a little clearer. The sides of the breast and body under the wings, with the under tail-coverts, are pale, dull brownish-white. The back, rump, and upper tail-coverts are of a dirty bluish-ash, washed with yellowish-brown, especially on the rump. The wings are brown; the outer edges of the third to the seventh primaries narrowly edged with whitish; the innermost secondaries more broadly and conspicuously edged with the same; larger coverts edged with dirty whitish. Outer webs of tail-feathers edged with white, purest and occupying half the web in the external one, narrowing and less clear to the central feathers, the basal portions, especially, assuming more the color of the back.

HABITS. The common Chickadee or Black-capped Titmouse is so well known throughout the greater portion of the United States as to be generally accepted, by common consent, as the typical representative of its numerous family. Until recently it has been supposed to be universally distributed over the continent, and while this is now questioned, it is not quite clear where its limits occur. In Eastern Maine the *Parus hudsonicus* and this species meet. In the District of Columbia it crosses the northern limits of *P. carolinensis*, and in the northern Mississippi Valley it mingles with the var. *septentrionalis*. It remains to be ascertained how far the species exceeds these bounds.

A few individuals of this species were observed by Mr. Dall, December 12, at Nulato, where, however, it was not common. They were also obtained by Bischoff at Sitka and Kodiak.

As in very many essential respects the whole family of *Paridæ* are alike in their characteristics of habits, their manner of collecting food, their restless, uneasy movements, the similarity of their cries, their residence in hollow trees or branches, and their nesting in similar places, with the exception only of a few species that construct their own pouch-like nests, we have taken the best known as the common point of comparison. Except in the variations in plumage, the points of difference are never great or very noticeable.

In New England the Black-Cap is one of our most common and familiar birds. In the vicinity of Calais, Mr. Boardman speaks of it as resident and abundant. The writer did not meet with it in Nova Scotia, nor even in the islands of the Bay of Fundy, where the *hudsonicus* is a common bird.

It is a resident species, nesting early in May, and having full-fledged nestlings early in June. While it seems to prefer the edges of woods as best affording the means of food and shelter, it by no means confines itself to

these localities, not only appearing familiarly around the dwellings in the winter season, but also occasionally breeding in open and exposed places. A hollow post of a fence in the midst of open cultivated fields, a decayed stump near the side of a public highway, a hollow log in a frequented farm-yard, and even the side of an inhabited dwelling, are localities these birds have been known to select in which to rear their young. In the winter they not unfrequently extend their visits, in search of food, into the very heart of large and crowded cities, where they seem as much at home and as free from alarm as in the seclusion of the forest, searching every crack where insect larvæ or eggs can be hid. On one occasion a pair had built its nest over a covered well which connects with the dwelling by a side door, through which water was drawn at all hours of the day by means of buckets and a rope, the wheel for which was in close proximity to their nest. They manifested, however, no uneasiness, and even after the young were ready to fly, the whole family would return to the place for shelter at night and during inclement weather.

Their courage and devotion to their young is a remarkable trait with the whole race, and with none more than with the present species. On one occasion a Black-Cap was seen to fly into a rotten stump near the roadside in Brookline. The stump was so much decayed that its top was readily broken off and the nest exposed. The mother refused to leave until forcibly taken off by the hand, and twice returned to the nest when thus removed, and it was only by holding her in the hand that an opportunity was given to ascertain there were seven young birds in her nest. She made no complaints, uttered no outcries, but resolutely and devotedly thrust herself between her nestlings and the seeming danger. When released she immediately flew back to them, covered them under her sheltering wings, and looked up in the face of her tormentors with a quiet and resolute courage that could not be surpassed.

The nest of the Chickadee is usually a warm and soft felted mass of the hair and fur of the smaller quadrupeds, downy feathers, fine dry grasses and mosses, lining the cavity in which it is placed and contracting it into a deep and purse-like opening if the cavity be larger than is necessary. Usually the site selected is already in existence, and only enlarged or altered to suit the wishes of the pair. But not unfrequently, at some pains, they will excavate an opening for themselves, not only in decaying wood, but even into limbs or trunks that are entirely sound.

These birds in winter collect around the camps of the log-cutters, become very tame, and seek on all occasions to share with their occupants their food, often soliciting their portion with plaintive tones. Though nearly omnivorous in the matter of food, they prefer insects to everything else, and the amount of good conferred by them on the farmers and the owners of woodlands in the destruction of insects in all their forms — egg, caterpillar, larva, or imago — must be very great. No chrysalis is too large to resist

their penetrating bill, and no eggs so well hidden that they cannot find them out. I have known one to attack and fly off with the chrysalis of a "Woolly-bear" or salt-marsh caterpillar (*Leucarectia acræa*). When thus foraging for their food they seem totally unconscious of the near presence of man, and unmindful of what is passing around them, so intent are they upon the object of their pursuit.

The notes of the Chickadee exhibit a great variety of sounds and combinations. As they roam through the country in small flocks in quest of food, their refrain is a continued and lively succession of varying notes sounding like a quaint chant. When annoyed by any intrusion, their cry is louder and harsher. They are rarely thus disturbed by the presence of man, and even when their nest is approached by him they present only a passive and silent resistance. Not so when a cat or a squirrel is observed in unwelcome vicinity. These are pursued with great and noisy pertinacity and hoarse cries of *dāy, dāy, dāy*, in which they are often joined by others of the same species.

So far as we have observed them, they are apparently affectionate, gentle, and loving to each other. We utterly discredit the accusation that they will treacherously beat out the brains of feeble birds of their own race. It is unsupported by testimony, and in the instance cited by Wilson he gives no evidence that this injury may not have been done by some other species, and not by one of its own kindred.

Their nest is usually near the ground, and the number of eggs rarely if ever exceeds eight. They are said to have two broods in the season, but this statement seems to be contradicted by their continued presence after June in small flocks, evidently the parents and their first and only brood, who apparently remain together nine or ten months.

The eggs of this species vary somewhat in regard to the distribution and number of the reddish-brown markings with which their white ground is more or less sprinkled. In some they are chiefly gathered in a ring about the larger end; in others they are distributed over the entire egg. Their eggs are smaller and a little less spherical in shape than those of the *septrionalis*, averaging .58 by .47 of an inch.

Parus atricapillus, var. septrionalis, HARRIS.

LONG-TAILED CHICKADEE.

Parus septrionalis, HARRIS, Pr. A. N. Sc. II, 1845, 300. — CASSIN, Illust. I, 1853, 17, 80, pl. xiv. — BAIRD, Birds N. Am. 1858, 389; Review, 79. — SCLATER, Catal. 1861, 14, no. 82. *Parus septrionalis*, var. *albescens*, BAIRD, Birds N. Am. 1858, xxxvii. ? *Parus atricapillus*, Pr. MAX. Cab. Jour. VI, 1858, 119.

SP. CHAR. Length about 5.50 inches; wing, 2.70; tail about 3 inches. Head above and below black, separated by white on the sides of the head; back brownish-ash. Be-

neath white, tinged with pale brownish-white on the sides. Outer tail-feathers, primaries, and secondaries broadly edged with white, involving nearly the whole outer web of outer tail-feather. Tail much graduated; the outer feather about .50 of an inch shorter than the middle. Second quill about as long as the secondaries.

HAB. Region of Missouri River to Rocky Mountains.

This race is very similar to the *P. atricapillus*, but differs from it somewhat as *atricapillus* does from *carolinensis*. Its size is much greater; the tail proportionally longer, and much more graduated; the white of wing and tail purer and more extended. The bill appears to be stouter and more conical. The back has, perhaps, a little more yellowish. The spurious or first primary is larger.

It will be a difficult matter to retain this as a species distinct from *atricapillus*, in view of the insensible gradation from one form to the other; and it may be looked upon, with scarcely a doubt, as simply a long-tailed Western variety of the common species. *P. occidentalis*, and, probably, even *P. carolinensis*, may even fall under the same category, their peculiarities of color and size being precisely such as would *a priori* be expected from their geographical distribution.

HABITS. The Long-tailed Titmouse appears to have an extended distribution between the Mississippi Valley and the Rocky Mountains, from Texas into the British Possessions, specimens having been received from Fort Simpson and Lake Winnipeg. Among the notes of the late Robert Kennicott is one dated Lake Winnipeg, June 6, mentioning the dissection of a female of this species found to contain a full-sized egg. A memorandum made by Mr. Ross, dated at Fort William, May 15, speaks of this bird as abundant at Fort Simpson, from August until November, the last having been seen November 10. One was shot, June 2, on Winnipeg River, "a female, who was about to lay her egg."

In regard to its distinct individual history but little is as yet known. It was discovered and first described by the late Edward Harris, of New Jersey, who accompanied Mr. Audubon in his expedition to the upper branches of the Missouri River, and who obtained this bird on the Yellowstone, about thirty miles above its junction with the Missouri, on the 26th of July. He describes its notes as similar to those of the common *atricapillus*, but less harsh and querulous, and more liquid in their utterance. Subsequently specimens were obtained by Mr. Kern, artist to the exploring expedition under Fremont in 1846.

It is the largest species of this genus in America. In its breeding-habits it is not different from the Eastern representatives. Mr. B. F. Goss found this species breeding abundantly at Neosho Falls, in Kansas. They nest in decayed stumps, hollow trees, branches, logs, etc., after the manner of the *atricapillus*. The excavation is usually ten or twelve inches, and even more, in depth. The nest is warmly made of a loose soft felt composed of the fur and fine hair of small quadrupeds, feathers, and the finer mosses.

The eggs, usually five, occasionally eight, in number, are of a rounded oval shape, measuring .60 by .50 of an inch. They have a pure dull-white ground, and the entire egg is very uniformly and pretty thickly covered with fine markings and small blotches of red and reddish-brown intermingled with a few dots of purplish.

***Parus atricapillus*, var. *occidentalis*, BAIRD.**

WESTERN CHICKADEE.

Parus occidentalis, BAIRD, Birds N. Am. 1858, 391 (W. Territory); Review, 81. — SCLATER, Catal. 1861, 14, no. 82. — ELLIOT, Illust. 1, pl. viii. — COOPER, Birds Cal. 1, 45.

SP. CHAR. Tarsi lengthened. Tail graduated; outer feather about .25 of an inch shorter than the middle. Above dark brownish-ash; head and neck above and below black, separated on the sides by white; beneath light, dirty, rusty yellowish-brown, scarcely whiter along the middle of body. Tail and wings not quite so much edged with whitish as in *P. atricapillus*. Length about 4.75; wing, 2.40; tail, 2.40.

HAB. Northwest coast region of the United States.

This race is of the same size as *P. atricapillus*, and resembles it in its markings; the ashy of the back is, however, washed with a darker shade of yellowish-brown. The brown of the under parts is so much darker as to cause the predominant color there to be a pale yellowish-brown, instead of brownish-white. The fourth quill is longest; the fifth and sixth a little shorter than the third; the second is about as long as the secondaries. The tail is rounded, rather more so than in most *atricapillus*, the difference in the lengths of the feathers amounting to about .25 of an inch. The amount of light margining to the quills and tail-feathers is much as in *atricapillus*, but rather less, perhaps, on the tail.

This seems to be the Pacific coast representative of the *P. atricapillus*, as *septentrionalis* belongs to the middle region, corresponding in its differences with other Western representatives of Eastern species.

HABITS. Dr. Cooper, in his Birds of Washington Territory, says of this variety: "The common Black-capped Chickadee, so abundant in the Eastern States, is, in Washington Territory, represented by the Western Titmouse, frequenting the low thickets and trees, where it is always busily employed seeking food." He observed its nest near Puget Sound, burrowed in soft rotten wood. Dr. Suckley found it quite abundant in the valley of the Willamette, and also at Fort Vancouver during winter. In habits it closely resembles the Black-Cap of the Eastern States.

It is chiefly found in Oregon and Washington Territory, visiting the northern part of California in winter, when it is also abundant near the Columbia River. At this season it is generally found among the deciduous trees along streams and oak groves, seeking its food among the branches. It feeds on seeds and insects, and is very fond of fresh meat, fat, and crumbs

of bread. They migrate but little, remaining at the Columbia River even when the ground is covered with snow. The eggs are as yet unknown, but without doubt they closely resemble those of the Eastern species.

Parus carolinensis, AUDUBON.

SOUTHERN CHICKADEE.

Parus carolinensis, ARD. Orn. Biog. II, 1834, 474, pl. clx. — Ib. Birds Am. II, 1841, 152, pl. cxxvii. — BAIRD, Birds N. Am. 1858, 392; Review, 81. — SCLATER, Catal. 1861, 13, no. 81. *Picile carolinensis*, BON. Consp. 1850, 230.

SP. CHAR. Second quill appreciably longer than secondaries. Tail very little rounded. Length about 4.50 inches; wing less than 2.50; tail, 2.40. Back brownish-ash. Head above, and throat, black, separated on sides of head by white. Beneath white; brownish-white on sides. Outer tail-feathers, primaries, and secondaries, not edged with white.

HAB. South Atlantic and gulf region of United States, north to Washington, D. C. Texas and the Mississippi Valley; north to Central Illinois; the only species in the southern portion of the latter State.

This species is, in general, rather smaller than *P. atricapillus*, although the tail and wing appear to be of much the same size. The body and feet are, however, smaller, and the extent of wing is three quarters of an inch less. The bill is apparently shorter and stouter.

The primaries are proportionally and absolutely considerably longer than the secondaries in the present species, the difference being .55 of an inch, instead of .45. The tail is rather more rounded, the feathers narrower.

The tail is considerably shorter than the wing, instead of longer; the black of the throat extends much farther back, is more dense and more sharply defined behind, than in *atricapillus*. Taking into view these differences, and others of color, we feel justified in retaining this as a species distinct from *atricapillus*, and, in fact, having *meridionalis* as its nearest relative (see Synoptical Table). Both this species and *atricapillus* are found together in the Middle States, each preserving its characteristics.

HABITS. South of the once famous line of Mason and Dixon this smaller counterpart of the Chickadee seems to entirely replace it, although in New Jersey and Pennsylvania, and occasionally even as far to the north as New York City, the two occur together. Its range is presumed to be all the States south of the Potomac and the Ohio, as far to the west as the Rio Grande. It was probably this species, and not the *atricapillus*, which was met with by Dr. Woodhouse in the Indian Territory. Without much doubt it breeds in all the States south of Pennsylvania.

In Southern Illinois, as far north in the Wabash Valley as the mouth of White River, this is the only species, unless the *P. atricapillus* occasionally occurs in winter. Specimens from this region are undistinguishable from those taken in Georgia and the extreme Southern States, and do not present the peculiar features of *P. atricapillus*. It is a very abundant species,

and resident, being in winter one of the most common, as well as one of the most familiar birds, inhabiting *all* localities, giving preference neither to swampy woods nor to door-yards, for it is as often seen in one place as another. It is never gregarious, though many may often be seen or heard at the same moment. It begins incubation early in April, generally selecting the wild plum and red-bud trees in the woods. This species very often constructs its own nesting-places, and the soft wood of these trees is very easily excavated. The excavation is generally made in a horizontal dead limb, with the opening on the under side; this is neat and regular, and as elaborate as those of any of the woodpeckers. Sometimes, however, a natural cavity is selected, frequently in a prostrate stump or "snag." The nest is almost always a very elaborate structure, being a strong compact cup or bed of "felt," whose main material is rabbit-fur and cow-hair.

In its habits it seems to resemble more closely the *P. palustris* of Europe than the *atricapillus*, being generally found only in the immediate vicinity of ponds and deep, marshy, moist woods. It is also rarely found other than singly or in pairs, the parent birds, unlike most of this family, separating from their young soon after the latter are able to provide for themselves. It rarely or never moves in flocks.

Their notes are said to be less sonorous and less frequent than those of our Black-capped Titmouse. In the winter a portion retire from the coast in South Carolina into the interior of the State and into Florida, where Mr. Audubon found them, in the winter of 1831 and 1832, much more abundant than he had ever seen them elsewhere. He found them breeding as early as February, occasionally in the nests deserted by the Brown-headed Nuthatch. A nest obtained by Dr. Bachman from a hollow stump, about four feet from the ground, was in form cup-shaped, measuring two inches internally in diameter at the mouth, and three externally, with a depth of two inches. It was constructed of cotton, fine wool, a few fibres of plants, and so elaborately felted together as to be of uniform thickness throughout.

Mr. Audubon was in error in regard to the eggs, which he describes as pure white. Their ground-color is of pure crystalline whiteness, but they are freely and boldly marked all over with deep reddish-brown and red spots. These, so far as we have compared the eggs, are larger, more numerous, and more deeply marked than are any eggs of the *atricapillus* we have ever met with.

According to the observations of the late Dr. Alexander Gerhardt of Whitfield County, Georgia, these birds usually breed in holes that have been previously dug out by the *Picus pubescens*, or in decaying stumps not more than five or six feet from the ground. He never met with its nest in living trees. The eggs are from five to seven in number, and are usually deposited in Georgia from the 10th to the last of April.

The eggs of this species are slightly larger than those of the *atricapillus*,

and the reddish-brown blotches with which they are profusely covered are much more distinctly marked. They are of a spheroidal oval in shape, have a pure white ground, very uniformly and generally sprinkled with blotches of a reddish-brown. They measure .60 by .50 of an inch.

***Parus rufescens*, TOWNS.**

CHESTNUT-BACKED CHICKADEE.

Parus rufescens, TOWNSEND, J. A. N. Sc. Phil. VII, II, 1837, 190. — AUD. Orn. Biog. IV, 1838, 371, pl. cccliii. — IB. Birds Am. 1841, 158, pl. cxxix. — BAIRD, Birds N. Am. 1858, 394; Review, 83. — COOPER & SUCKLEY, P. R. R. Rep. XII, II, 1859, 194 (nesting). — SLATER, Catal. 1861, 14, no. 86. — DALL & BANNISTER (Alaska). — COOPER, Birds Cal. I, 47. *Picicle rufescens*, BONAP. Consp. 1850, 230.

SP. CHAR. Whole head and neck above, and throat from bill to upper part of breast, sooty blackish-brown. Sides of head and neck, upper part of breast, and middle of body, white; back and sides dark brownish-chestnut. Length, 4.75 inches; wing, 2.36; tail, 2.16.

HAB. Western United States, near Pacific coast.

HABITS. The Chestnut-backed Titmouse was first obtained by Townsend on the banks of the Columbia River, and described in the Journal of the Philadelphia Academy. It is a resident, throughout the year, of the forests of the Columbia, and is found throughout California. Like all of this familiar family, they may be seen in small flocks, of all ages, in the autumn and winter, moving briskly about, uttering a number of feeble querulous notes, after the manner of the *atricapillus*, but never joining in anything like the quaint and jingling song of that bird. They occasionally have a confused warbling chatter. These busy little groups may be often seen in company with the *Parus occidentalis* and the *Regulus satrapa*, moving through the bushes and thickets, carefully collecting insects, their larvæ and eggs, for a few moments, and then flying off for some other place. They are supposed to rear their young in the midst of the densest forests.

Mr. Nuttall states that when the gun thins their ranks the survivors display surprising courage and solicitude, following their destroyer with wailing cries, entreating for their companions.

Dr. Gambel found the young of this species in great abundance around Monterey in the fall and winter months. Dr. Heermann saw them in June, 1852, feeding their young in the vicinity of San Francisco, where, however, they are rare.

In Washington Territory, Dr. Cooper found this the most abundant species. It preferred the dense evergreens, where large parties could be found at all seasons busily seeking food among the leaves and branches, ascending even to the highest tops. They were usually in company with the *Reguli* and the other Titmice. Mr. Bischoff found them abundant at Sitka.

They nest, like all the others of this genus, in holes in soft decayed trunks and large limbs of trees a few feet from the ground. Their eggs are not as yet known.

Parus hudsonicus, FORST.

HUDSON'S BAY CHICKADEE; BROWN-CAPPED CHICKADEE.

Parus hudsonicus, FORSTER, Philos. Trans. LXII, 1772, 383, 430. — AUD. Orn. Biog. II, 1834, 543, pl. cxciv. — IB. Birds Am. II, 1841, 155, pl. cxxviii. — BAIRD, Birds N. Am. 1858, 395; Review, 82. — SAMUELS, 185. — DALL & BANNISTER (Alaska). *Parus hudsonicus* var. *littoralis*, BRYANT, Pr. Bost. Soc. N. H. IX. 1863, 368.

SP. CHAR. Above yellowish olivaceous-brown; top of head purer brown, not very different in tint. Chin and throat dark sooty-brown. Sides of head white. Beneath white; sides and anal region light brownish-chestnut. No whitish on wings or tail. Tail nearly even, or slightly emarginate and rounded. Lateral feathers about .20 shortest. Length about 5 inches; wing, 2.40; tail, 2.66.

HAB. Northern portions of North America, from Atlantic to Pacific.

Specimens from the most northern localities appear larger than those from Maine and Nova Scotia (*P. littoralis*, BRYANT), with proportionally longer tails (3.00 inches, instead of 2.40). We can, however, detect no other difference.

The *Parus sibiricus* of Europe is very similar in coloration and characters to the *P. hudsonicus*. The principal difference is seen in the cheeks, which in *sibiricus* are pure white, this color extending along the entire side of the neck, widening behind, and extending round towards the back. In *hudsonicus* the cheeks behind the eyes and sides of the neck are ash-gray, the white being confined to the region below or near the eye. The smoky-gray of the upper part of head and neck in *sibiricus* is in a stronger contrast with the brighter rufescent-gray of the back, and is separated from it by an obscure, concealed, whitish dorsal half-collar, represented in *hudsonicus* only by a dull grayish shade in the plumage.

HABITS. This interesting species, one of the liveliest and most animated of its family, belongs to the northern and eastern sections of North America. It is found in the eastern and northern portions of Maine, and probably also in the northern parts of New York, Vermont, and New Hampshire. In the heavily wooded mountain-valley of Errol, in the latter State, Mr. Maynard met with this bird in the latter part of October, in company with the common *atricapillus*. In the same month he also obtained two birds in Albany, in the northwestern corner of Maine. A single specimen was taken at Concord, Massachusetts, October 29, by Mr. William Brewster.

Near Calais it is resident, but not common. It is more abundant in the islands of the Bay of Fundy, where it takes the place, almost exclusively, of the *atricapillus*. The writer first met with these lively little wood-sprites

in 1850, in the thick swampy woods which cover one of the small islands near Grand Menan. Their general appearance as they flitted through the woods, or rustled restlessly among the tangled débris of decaying trees and underbrush with which the forest was choked, was not unlike that of our common Black-Cap. Yet there was an indescribable something both in their cries and in their manners that at once suggested a difference of species. To my ear their cries were sharper, clearer, and a trifle harsher. There was none of that resonant jingle so full of charm in the Chickadee. Their notes, too, were more articulate, more like distinct words, and were brought out at certain times with an emphasis the effect of which was very striking. Beginning with *tschā-dēē*, the *dēē-dēē-dēē* was reiterated with an almost incessant volubility.

It seemed to be a more retiring bird, never frequenting the houses, but keeping closely to thick and retired woods. Yet it is not a timid species, but seemed entirely unmindful of our presence, or, when mindful of it, to resent it as an impropriety, rather than to fear it as a danger. They apparently had nests or young at the time of my visit, though I could not detect their locality. One pair became at last so annoyed at my prolonged presence as to manifest their uneasiness by keeping within a few feet of my head, following me wherever I went, and without ceasing from their close surveillance until I finally left their grove and emerged into the open country. All the time they brought out the cry of *dēē-dēē* with a clear, ringing emphasis that was almost startling.

A few days later, being at Halifax, Mr. Andrew Downes, the naturalist, took me to the nest of these birds in a small grove in the vicinity of that city. The nest was in a small beech-tree, and had been cut through the living wood. The excavation, which was not more than two feet from the ground, was about ten inches in depth, was in a horizontal position only about two inches, where it turned abruptly downward, and from a width of an inch and a half assumed a width of three, and a depth of seven or eight inches. This was warmly lined with feathers and soft fur. The nest contained young birds. These particulars we only ascertained when we had laid bare the excavation by a sharp hatchet. Though disappointed in our search for eggs, yet we witnessed a very touching manifestation of devotion on the part of the parents, and of neighborly solicitude in various other inmates of the grove, which was at once most interesting and a scene long to be remembered.

With all the self-sacrificing devotion of the Black-Cap, these birds displayed a boldness and an aggressive intrepidity that at once commanded our respect and admiration. I never witnessed anything quite equal to it. They flew at our faces, assailed our arms as we wielded the invading hatchet, and it was difficult not to do them even unintentional injury without abandoning our purpose. Before we could examine the nest they had entered, and had to be again and again removed. As soon as we were satisfied that

the nest of this heroic pair did not contain what we sought, we left them, and turned to look with equal admiration upon the indignant assembly of feathered remonstrants by which we were surrounded. The neighboring trees swarmed with a variety of birds, several of which we had never before seen in their summer homes. There were the Red-Poll Warbler, the Black and Yellow Warbler, and many others, all earnestly and eloquently crying out shame upon our proceedings.

Dr. Bryant, in his Notes on the Birds of Yarmouth, N. S., etc., mentions finding quite a number of this species on Big Mud Island, near that place. A pair of these birds with their young were seen by him near Yarmouth on the 3d of July. Their habits seemed to him identical with those of the Black-Cap. The young were fully grown and could fly with ease, yet their parents were so solicitous about their safety that he could almost catch them with his hand. Their notes appeared to him similar to those of our common species, but sharper and more filing, and can be readily imitated by repeating, with one's front teeth shut together, the syllables *tzēē-dēē-dēē-dēē*.

Mr. Audubon found a nest of this Titmouse in Labrador. It was built in a decayed stump about three feet from the ground, was purse-shaped, eight inches in depth, two in diameter, and its sides an inch thick. It was entirely composed of the finest fur of various quadrupeds, chiefly of the northern hare, and all so thickly and ingeniously matted throughout as to seem as if felted by the hand of man. It was wider at the bottom than at the top. The birds vehemently assailed the party.

Mr. Ross, in notes communicated to the late Mr. Kennicott, mentions that specimens of this species were shot at Fort Simpson, October 13, in company with *P. septentrionalis*, and others were afterwards seen towards the mountains. The notes he describes as harsher than those of the *septentrionalis*. The Smithsonian museum contains specimens from Fort Yukon and Great Slave-Lake, besides the localities already referred to. Mr. Dall found it the commonest Titmouse at Nulato, abundant in the winter, but not present in the spring.

The eggs of this species measure .56 by .47 of an inch, are of a rounded oval shape, and with a white ground are somewhat sparingly marked with a few reddish-brown spots. These are usually grouped in a ring around the larger end.

GENUS **PSALTRIPARUS**, BONAP.

Psaltriparus, BONAP. Comptes Rendus, XXXI, 1850, 478. (Type, *P. melanotis*.)

Ægithaliscus, CABANIS, Museum Heineanum, 1851, 90. (Type, *Parus erythrocephalus*.)

Psaltria, CASSIN, Ill. N. Am. Birds, 1853, 19.

GEN. CHAR. Size very small and slender. Bill very small, short, compressed, and with its upper outline much curved for the terminal half. Upper mandible much deeper than under. Tail long, slender, much graduated; much longer than the wings; the feathers very narrow. Tarsi considerably longer than the middle toe. No black on the

crown or throat. Eyes white in some specimens, brown in others. Nest purse-shaped; eggs unspotted, white.

No bird of this genus belongs to the eastern portion of the United States. The three species may be defined as follows:—

A. Head striped with black on the sides.

P. melanotis. The stripes passing under the eye and uniting on the occiput. *Hab.* Eastern Mexico

B. No stripes on the head.

P. minimus. Back ashy; crown light brown. *Hab.* Pacific Province of United States. var. *minimus*.

Back and crown uniform ashy. *Hab.* Middle Province and southern Rocky Mountains of United States var. *plumbeus*.

***Psaltiriparus melanotis*, BONAP.**

BLACK-EARED BUSH-TITMOUSE.

Parus melanotis, HARTLAUB, Rev. Zool. 1844, 216. *Parus melanotis*, BP. Consp. 1850, 230. *Egithaliscus melanotis*, CAB. Mus. Hein. I, 1850, 1851, 90. *Psaltiriparus melanotis*, WESTERMANN, Bijl. Dierk. 1851, 16, plate. *Psaltiriparus melanotis*, BONAP. C. R. XXXVIII, 1854. — SLATER, P. Z. S. 1858, 299. — *Ib.* 1864, 172 (City Mex.). — SALVIN, Ibis, 1866, 190 (Guatemala). — BAIRD, Birds N. Am. 1858, 386, pl. liii, fig. 3; Review, 84. *Psaltiriparus personatus*, BONAP. C. R. XXXI, Sept. 1850, 478.

SP. CHAR. A black patch on each cheek, nearly meeting behind. Crown and edges of the wing and tail ash-gray; rest of upper parts yellowish-brown, lighter on the rump. Beneath whitish; anal region tinged with yellowish-brown. Length about 4 inches; wing, 1.90; tail, 2.30.

HAB. Eastern Mexico; south to Guatemala; Oaxaca (high region). SLATER. East Humboldt Mountains, Nevada? RIDGWAY.

HABITS. In regard to the specific peculiarities and the distinct individual



Psaltiriparus minimus

habits of the members of this pretty little species, little is at present known. Its mode of nesting has not been observed, and no mention is made, by those who have met with it, of its peculiarities of song, nor have we any information in regard to any of its habits. Its geographical distribution, so far as ascertained, is from the south side of the valley of the Rio Grande of Mexico to Guatemala, and there is no reliable evidence of

its crossing the United States boundary line, unless Mr. Ridgway is correct in his assurance that he saw it in the East Humboldt Mountains of Nevada, near Fort Ruby. It was first described from Guatemalan specimens. Mr. O. Salvin (Ibis, 1866, p. 190) states that on more than one occasion he observed what he believed to be this species, in the pine-woods of the mountains near Solola, and above the lake of Atitlan.

Psaltriparus minimus*, var. *minimus*, BONAP.*LEAST BUSH-TITMOUSE.**

Parus minimus, TOWNSEND, J. A. N. Sc. VII, II, 1837, 190. — AUD. Orn. Biog. IV, 1838, 382, pl. cccxxxii, figs. 5, 6. — IB. Birds Am. II, 1841, 160, pl. cxxx. *Peuce minima*, BON. Consp. 1850, 230. *Psaltia minima*, CASSIN, Illust. 1853, 20. *Psaltriparus minimus*, BON. C. R. XXXVIII, 1854, 62. — BAIRD, Birds N. Am. 1858, 397; Review, 84. — COOPER & SUCKLEY, P. R. R. Rep. XII, II, 1859, 195. — COOPER, Birds Cal. I, 48.

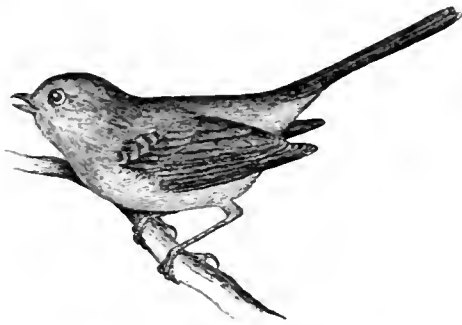
SP. CHAR. Tail long, feathers graduated. Above rather dark olivaceous-cinereous; top and sides of head smoky-brown. Beneath pale whitish-brown, darker on the sides. Length about 4 inches; wing, 1.90; tail, 2.25.

HAB. Pacific coast of United States.

There is quite an appreciable difference between specimens of this species from Washington Territory and California; the latter are smaller, the under parts paler. In the series before us, however, we see no grounds for specific distinction.

HABITS. This interesting little species was first added to our fauna by the indefatigable Mr. Townsend in 1837. It is abundant throughout the Pacific coast from Fort Steilacoom to Fort Tejon. Dr. Gambel found it exceedingly abundant both in the Rocky Mountains and throughout California. During the winter the otherwise cheerless woods were alive with the busy and noisy troops of these restless and industrious birds, gleaning their scanty fare in company with the *Reguli*, in every possible position and manner, from bush and tree. He describes their anxious solicitous search for food as quite curious. They kept up a continual twittering, and so intent were they in their employment that they appeared to lose sight of all danger, and it was by no means unusual to be so surrounded by a flock as almost to render it possible to catch them in the hand.

Dr. Cooper found this species abundant in Washington Territory, but never met with it north of the Columbia River. Dr. Suckley says it is quite common at Fort Steilacoom. He could not, however, detect any difference in its habits from those of other species of this family. He saw none in Washington Territory during the winter, and presumes they all migrate to the South, though the *rufescens* and the *occidentalis* are found there throughout the winter. Townsend, however, speaks of it as a constant resident about the Columbia River, hopping around among the bushes, hanging from the twigs in the manner of other Titmice, twittering all the while with a rapid enunciation resembling the words *thshish tshist-tsce-twee*.



Psaltriparus minimus.

Mr. Nuttall first observed their arrival on the banks of the Wahlamet River about the middle of May. They were very industriously engaged in quest of insects, and were by no means shy, but kept always in the low bushes in the skirts of the woods. On one occasion the male bird was so solicitous in regard to the safety of the nest as to attract him to the place where, suspended from a low bush, about four feet from the ground, hung their curious home. It was formed like a long purse, with a round hole for entrance near the top, and made of moss, down, lint of plants, and lined with feathers. The eggs were six in number, pure white, and already far gone toward hatching. In the following June, in a dark wood near Fort Vancouver, he saw a flock of about twelve, which, by imitating their chirping, he was able to call around him, and which kept up an incessant and querulous chirping.

A nest of this bird presented by Mr. Nuttall to Audubon was cylindrical in form, nine inches in length and three and a half in diameter. It was suspended from the fork of a small twig, and was composed externally of hypnum, lichens, and fibrous roots so interwoven as to present a smooth surface, with a few stems of grasses and feathers intermingled. The aperture was at the top, and did not exceed seven eighths of an inch in diameter. The diameter of the internal passage for two thirds of its length was two inches. This was lined with the cottony down of willows and a vast quantity of soft feathers. The eggs were nine in number, pure white, .56 of an inch by .44 in their measurement.

Dr. Cooper found them throughout the year near San Francisco. He found one of their nests at San Diego as early as the first of March. The nest is so large, compared with the size of the birds, as to suggest the idea that the flock unite to build it. He gives the measurements as eight inches in length and three in diameter, outside; the cavity five inches long, one and a half in diameter. It was cylindrical, and suspended by one end from a low branch.

When one of these birds is killed, Dr. Cooper says that the others come round it with great show of anxiety, and call plaintively until they find it will not follow them, becoming so fearless as almost to allow of their being taken by the hand.

Psaltriparus minimus, var. *plumbeus*, BAIRD.

LEAD-COLORED BUSH-TITMOUSE.

Psaltria plumbea, BAIRD, Pr. A. N. S. VII, June, 1854, 118 (Little Colorado). *Psaltriparus plumbeus*, BAIRD, Birds N. Am. 1858, 398, pl. xxxiii, fig. 2; Review, 84. — SCLATER, Catal. 1861, 398, no. 77. — COOPER, Birds Cal. I, 49.

SP. CHAR. Tail long, feathers graduated. Above rather light olivaceous-cinereous. Top of head rather clearer: forehead, chin, and sides of head, pale smoky-brown. Beneath brownish-white, scarcely darker on the sides. Length about 4.20 inches; wing, 2.15; tail, 2.50.

HAB. Southern Rocky Mountain region of United States, from mountains of West Arizona to Green River, Wyoming; west to Carson City, Nevada (RIDGWAY).

This variety is very similar to the *Psaltiriparus minimus* of the west coast, which it represents in the Rocky Mountain region. It is, however, appreciably larger, the wings and tail proportionally longer. The top of the head is plumbeous, uniform with the back, instead of smoky-brown. The back is a paler ash, the under parts darker.

HABITS. Of the history of this variety but little is known. It is found in the southern portion of the Rocky Mountain regions, within the United States, in Arizona and New Mexico. The extent of its area of distribution remains to be ascertained. Dr. Kennerly met with it on Little Colorado River, where he observed it among the scattered bushes along the banks of the river, occurring in large flocks. These passed rapidly from place to place, uttering their short, quick notes. He afterward met with them along the head waters of Bill Williams Fork, inhabiting the tops of the cotton-wood trees. When attracted to them by their notes, they could only be seen after a very careful search. He obtained no knowledge as to their mode of nesting, and no information, so far as we are aware, has been obtained in regard to their eggs. It may, however, be safely conjectured that they are white, and hardly distinguishable from those of the *minimus*. Dr. Coues found them common near Fort Whipple, Arizona.

Mr. Ridgway met with this bird in especial abundance among the cañons of West Humboldt Mountains in September. He found it also in all suitable places westward to the very base of the Sierra Nevada Mountains. It was met with principally in the thick brushwood bordering the streams, in ever-restless companies, continually twittering as they flew from bush to bush, in single rows. Mr. Ridgway describes these birds as remarkably active in their movements. If unmolested, they were exceedingly unsuspicious and familiar. During November he found them inhabiting the cedars, always associating in scattered flocks.

GENUS **AURIPARUS**, BAIRD.

Auriparus, BAIRD, Rev. Am. Birds, 1864, 85. (Type, *Egithalus flaviceps*, SUND.)

GEN. CHAR. Form sylvicoline. Bill conical, nearly straight, and very acute; the commissure very slightly and gently curved. Nostrils concealed by decumbent bristles. Wings long, little rounded; the first quill half the second; third, fourth, and fifth quills nearly equal, and longest. Tail slightly graduated. Lateral toes equal, the anterior united at the extreme base. Hind toe small, about equal to the lateral. Tarsus but little longer than the middle toe.

This genus is closely allied to *Paroides* of Europe, as shown in Birds of North America (p. 399), though sufficiently different. It is much more sylvicoline in appearance than the other American *Paridæ*.

Auriparus flaviceps, BAIRD.**YELLOW-HEADED BUSH-TITMOUSE; VERDIN.**

Aegithalus flaviceps, SUNDELL, Oversigt af Vet. Ak. Forh. VII, v, 1850, 129. *Psaltia flaviceps*, SCL. P. Z. S. XXIV, March, 1856, 37. *Psaltiriparus flaviceps*, SCL. Catal. Am. Birds, 1861, 13, no. 79. *Paroides flaviceps*, BAIRD, Birds N. Am. 1858, 400, pl. liii, fig. 2. *Auriparus flaviceps*, BAIRD, Review, 1864, 85. — COOPER, Birds Cal. I, 51. *Conirostrum ornatum*, LAWRENCE, Ann. N. Y. Lye. May, 1851, 113, pl. v, fig. 1 (Texas).

SP. CHAR. Above cinereous; head, all round, yellow; lesser wing-coverts chestnut; beneath brownish-white. Length, 4.50 inches; wing, 2.16; tail, 2.35.

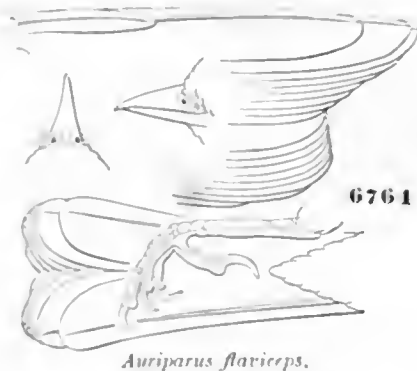
HAB. Valleys of the Rio Grande and Colorado; Cape St. Lucas.

HABITS. This new and interesting little species was first added to our fauna by Mr. Lawrence in 1851, only a year after its first description as a bird of Mexico. Notwithstanding the abundance in which it has been in certain localities, less has been developed in regard to its habits and specific characteristics than we seem to have had a right to anticipate.

It was found in Western Texas, in Mexico, in the lower valleys of New Mexico and Arizona, and is very abundant at Cape St.

Lucas. Of the eighteen species of birds found by Mr. John Xantus breeding in the last-named locality, this one was regarded as the most abundant. In a letter from that gentleman, written in August, 1859, he mentioned that he had collected over one hundred eggs of this species, during that season, in the immediate vicinity of Cape St. Lucas.

Dr. Heermann, in his report on the birds observed in Lieutenant Williamson's explorations, states that he first discovered this species in Southern California, at the terminus of the Mohave River. Owing to their extreme wildness, he was not able to obtain any specimens. In searching for their food, he states that they often remained suspended with their backs downward, after the manner of the Titmice. He found their nests quite abundant, though from the lateness of the season few of the birds were remaining, in the neighborhood of Fort Yuma. Dr. Heermann describes their nests as spherical, formed of twigs, and having the entrance on one side. The interior was lined with down and feathers, and contained usually from



four to six eggs. These he describes as having, when fresh, a ground-color of pale blue, dashed all over with small black spots.

Dr. Kennerly, in his Report on the Birds of the Mexican Boundary Survey, states that he met with this species in the vicinity of the Rio Grande. They were very wild, flew rapidly, and to quite a distance before they alighted. They seemed to frequent the low mezquite-bushes on the hillsides.

Mr. Xantus found this species, when he first arrived at San Lucas, on the 4th of April, with young birds already fully fledged, although others were still breeding and continued to breed until the middle of July. Two fifths of all the eggs he collected that season, he writes, were of this species. This may, however, have been in part owing to the conspicuous prominence of their nests, as well as to their abundance. Xantus found the nest in various positions. In one instance it was suspended from a leafless branch not three feet from the ground, with its entrance nearly to the ground. In another instance it was on an acacia twenty feet from the ground. For the most part they are hung from low acacia-trees, on the extreme outer branches. In all cases the entrance to the nest was from the lower end, or towards the ground.

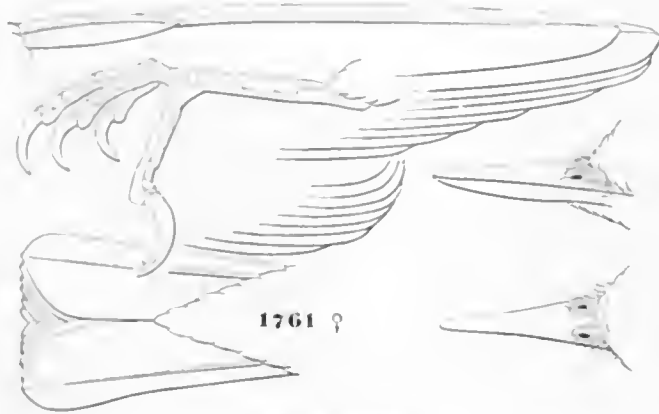
Dr. J. G. Cooper, in his History of the Birds of California, speaks of finding a large number of this beautiful little bird during the whole winter frequenting the thickets of algarobia and other shrubs, and with habits intermediate between those of Titmice and Warblers, corresponding with their intermediate form. Their song resembles that of the Chickadee, and they also uttered a loud cry, as they sat on high twigs, with a triple lisping note resembling *tzee-tee-tee*. Dr. Cooper found a pair building on the 10th of March. They first formed a wall, nearly spherical in outline, of the thorny twigs of the algarobia, in which tree the nest was usually built. They then lined it with softer twigs, leaves, the down of plants, and feathers. They covered the outside with thorns, until it became a mass as large as a man's head, or nine inches by five and a half on the outside. The cavity is four and a half inches by two, with an opening on one side just large enough for the bird to enter. On the 27th of March, Dr. Cooper found the first nest containing eggs. These were in all instances four in number, pale blue, with numerous small brown spots, chiefly near the larger end, though some had very few spots and were paler. Their size he gives as .60 by .44 of an inch. In one nest, which he closely observed, the eggs were hatched after about ten days' incubation, and in two weeks more the young were ready to leave their nest.

SUBFAMILY *SITTINÆ*.

The characters of the *Sittinæ* are expressed with sufficient detail on page 86. The section is represented in America by a single genus, confined mainly to the northern portion.

GENUS **SITTA**, LINNÆUS.*Sitta*, LINNÆUS, Syst. Nat. 1735. (Agassiz.)

GEN. CHAR. Bill subulate, acutely pointed, compressed, about as long as the head;



culmen and commissure nearly straight; gonys convex and ascending; nostrils covered by a tuft of bristles directed forward. Tarsi stout, scutellate, about equal to the middle toe, much shorter than the hinder, the claw of which is half the total length. Outer lateral toe much longer than inner, and nearly equal to the middle. Tail very short, broad, and nearly even; the feathers soft and truncate. Wings reaching nearly to the end of the tail, long and

acute, the first primary one third of (or less) the third, or longest. Iris brown. Nest in holes of trees. Eggs white, spotted with reddish.

The North American species may be arranged as follows:—

A. Crown black.**S. carolinensis.** Belly white; no black stripe through eye.

Bill, .70 long, .17 deep. Black spots on tertials sharply defined.

Hab. Eastern Province North America var. *carolinensis*.Bill, .80 long, .14 deep. Black spots on tertials obsolete. *Hab.* Middle and Western Province United States, south to Cordova, Mexico. var. *aculeata*.**S. canadensis.** Belly brownish-rusty. A black stripe through eye. *Hab.* Whole of North America.**B.** Crown not black.**S. pusilla.** Crown light hair-brown; hind toe much longer than the middle one. *Hab.* South Atlantic and Gulf States.**S. pygmæa.** Crown greenish-plumbeous; hind toe about equal to middle one. *Hab.* Western and Middle Province United States, south to Xalapa.**Sitta carolinensis**, var. **carolinensis**, LATH.**WHITE-BELLIED NUTHATCH.***Sitta europæa*, var. γ , *carolinensis*, GM. S. N. 1, 1788, 440. *Sitta carolinensis*, LATH. Ind. Orn. 1, 1790, 262; also of all other American writers. — REICHENBACH, Handbuch, Abh. II, 1853, 153, tab. cxiii, figs. 3563, 3564. — BAIRD, Birds N. Am. 1858, 374, pl. xxxiii, fig. 4; Review, 86. — MAX. Cab. Jour. VI, 1858, 106. *Sitta melanocephala*, VIEILL. Gal. I, 1834, 171, pl. clxxi.

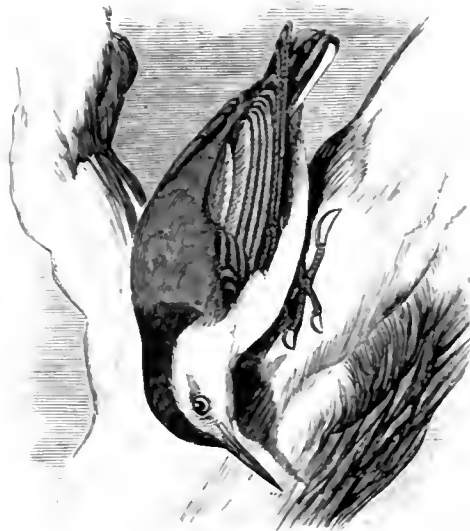
Other figures: WILSON, Am. Orn. 1, pl. ii, fig. 3. — AUD. Orn. Biog. II, pl. clii. — IN. B. A. IV, pl. cclxvii.

SP. CHAR. Above ashy-blue. Top of head and neck black. Under parts and sides of head to a short distance above the eye white. Under tail-coverts and tibial feathers

brown; concealed primaries white. Bill stout. Female with black of head glossed with ashy. Length about 6 inches; wing about 3.75.

HAB. United States and British Provinces; west to the Valley of the Missouri.

HABITS. The common White-bellied Nuthatch has an extended distribution throughout nearly the whole of Eastern North America, from the Atlantic to the Rocky Mountains. West of the great central plains it is replaced by the var. *aculeata*. It has not been met with, so far as I am aware, farther north than Nova Scotia. It is a resident of Eastern Maine, and is quite common in the southern and western portions of the same State. In Massachusetts it is rather common than abundant, and more plentiful in the western than in the eastern portions of that State.



Sitta aculeata.

The habits of this and the other species of Nuthatches partake somewhat of those of the smaller Woodpeckers and of the Titmice. Without the noisy and restless activity of the latter, they seek their food in a similar manner, and not unfrequently do so in their company, moving up or down the trunks and over or under the branches of trees, searching every crack and crevice of the bark for insects, larvæ, or eggs. Like the Woodpeckers, they dig industriously into decayed branches for the hidden grub, and like both Woodpeckers and Chickadees they industriously excavate for themselves a place for their nests in the decayed trunks of forest trees. Their nest, however, is usually at a greater elevation, often some twenty or thirty feet from the ground. The European Nuthatch is said to plaster up the entrance to its nest, to contract its opening and lessen the dangers of unfriendly intrusion. This habit has never been observed in any of the American species.

All our ornithological writers have noticed the assiduities of the male bird to his sitting mate, and the attention with which he supplies her with food. He keeps ever in the vicinity of the nest, calls her from time to time to come to the mouth of the hole to take her food, or else to receive his endearments and caresses, and at the approach of danger fearlessly intervenes to warn her of it. When feeding together, the male bird keeps up his peculiar nasal cry of *hōnk-hōnk*, repeating it from time to time, as he moves around the trunk or over the branches.

Their favorite food is insects, in every condition. With this, when abundant, they seem content, and rarely wander from their accustomed woods in summer. In winter, when snow or ice covers the branches or closes against them the trunks of trees, they seek the dwellings and out-houses for their

necessary food, and will even alight on the ground in quest of seeds. In searching for food among the trees, they move as readily with their heads downward as in any other position. Their motion is a uniform and steady progression, somewhat in the manner of a mouse, but never, like the Woodpecker, by occasional hops.

The European species collect and store away the fruit of the hazel and other nut-bearing trees. Our bird has been supposed to do the same thing, but this is by no means an indisputable fact.

In some parts of the country absurd prejudices prevail against these interesting little birds. They are indiscriminately confounded with the smaller Woodpeckers, called, with them, Sap-Suckers, and because in the spring and fall they frequent old orchards are most unwisely, as well as unjustly, persecuted. They are among the most active and serviceable of the fruit-grower's benefactors. His worst enemies are their favorite food. It is to be hoped that soon a better-informed public opinion will prevail, cherishing and protecting, rather than seeking to destroy, this useful, affectionate, and attractive species.

Interesting accounts are given in English works of the confiding tameness of the European species. When kindly treated, it will come regularly for its food, approaching within a foot or two of the hand of its benefactor, and catching with its bill the food thrown to it before it can reach the ground.

The pair work together in constructing the perforation in which they make their nest. When the excavation has been well begun, they relieve each other at the task. The one not engaged in cutting attends upon its mate, and carries out the chips as they are made. These nesting-places are often quite deep, not unfrequently from fifteen to twenty inches. Audubon states that they build no nest, but this does not correspond with my observations. In all the instances that have come to my knowledge, warm and soft nests were found, composed of down, fur, hair, or feathers loosely thrown together, and, though not large in bulk, yet sufficient for a lining for the enlarged cavity that completes their excavation. Soon after they are hatched, the young climb to the opening of the nest to receive their food, and, before they are ready to fly, venture out upon the trunk to try their legs and claws before their wings are prepared for use, retiring at night to their nest. In the Southern States they are said to have two broods in a season.

The eggs of this Nuthatch measure .80 by .62 of an inch. Their ground-color is white, but when the egg is fresh it has a beautiful roseate tinge, and generally receives an apparently reddish hue from the very general distribution of the spots and blotches of rusty-brown and purplish with which the eggs are so closely covered. These markings vary greatly in size, from fine dots to well-marked blotches. Their color is usually a reddish-brown; occasionally the markings are largely intermixed with purple.

Sitta carolinensis, var. *aculeata*, CASS.

SLENDER-BILLED NUTHATCH.

Sitta aculeata, CASSIN, PR. A. N. SC. VIII, Oct. 1856, 254. — BAIRD, BIRDS N. AM. 1858, 375, pl. xxxiii, fig. 3; Review, 86. — COOPER, ORN. CAL. I, 1870, 54. ? *Sitta carolinensis*, SCLATER, P. Z. S. 1856, 293 (Cordova); 1858, 300 (Oaxaca); 1859, 363 (Xalapa), 373 (Oaxaca).

SP. CHAR. Very similar to *carolinensis*; but upper secondaries with only obscure blackish blotches, instead of sharply defined longitudinal spots of clear black. Bill slender and more attenuated.

HAB. Western and Middle Provinces of the United States, south to Cordova, Mex. Orizaba (Alpine regions), SUMICH.

The characters given above express the essential differences between this and the Eastern race of *S. carolinensis*. In the present form, the depth of the bill opposite its base is .14, the width .17, and .80 or more in length from the forehead; while these same measurements in var. *carolinensis* are .17, .22, and .70. The obsolete character of the black spots on the secondaries is a persistent feature in the var. *aculeata*.

HABITS. This bird chiefly differs from its eastern congener in its more slender bill. There appears to be no difference in regard to their habits, at least none have been noticed, and it is probable there is none other than trivial changes caused by its opportunities of procuring food, and the kinds upon which it subsists. It is supposed to be distributed throughout Western North America, from the British Possessions to Mexico, though Dr. Cooper thinks that it is not a common bird south of San Francisco, and only to be seen there in the colder months. It has been met with at San Diego in February. He did not observe any in the Coast Mountains, near Santa Cruz, but northward they are numerous in the summer, frequenting chiefly the groves of the deciduous oaks, creeping constantly about their trunks and branches in search of insects, which they also occasionally seek on the roofs and walls of houses. Their habits are similar to those of *S. canadensis*, but their movements are said to be slower, and their note is a single harsh call, uttered occasionally, and responded to by their comrades. Dr. Cooper found them quite common in Washington Territory and at Puget Sound. Dr. Suckley also mentions their great abundance.

Dr. Kennerly met with this species a hundred miles west of Albuquerque, New Mexico, and quite abundant among the pines of the Sierra Madre. He speaks of its note as being peculiar.

Mr. J. K. Lord states that this species remained about Colville during the winter, when the thermometer was 30° below zero. He also mentions that he found them nesting, in June, in the branches of the tallest pine-trees, so high up as to render the obtaining their eggs almost an impossibility.

Mr. Ridgway found the Slender-billed Nuthatch abundant, throughout the

year, in the vicinity of Carson City, among the pines on the Sierra Nevada Mountains. He noted its great similarity in manners to the *carolinensis*; at the same time the well-marked difference in the notes did not escape his attention. These notes are much weaker, and are uttered in a finer tone, and some of them are said to be entirely different.

Sitta canadensis, LINN.

RED-BELLIED NUTHATCH.

Sitta canadensis, LINN. Syst. Nat. I, 1766, 177. — AUD. Orn. Biog. II, 1834, pl. cviii. — 1B. Birds Am. IV, pl. cexlviii. — REICH. Handb. Abh. II, 1853, 152, tab. dxiii, figs. 3561, 3562. — BAIRD, Birds N. Am. 1858, 376; Review, 87. — SCLATER, Catal. 1861, 15, no. 91. — COOPER, Orn. Cal. I, 1870, 54. *Sitta varia*, WILS. Am. Orn. I, 1808, 40, pl. ii.

SP. CHAR. Above ashy-blue. Top of head black: a white line above and a black one through the eye. Chin white; rest of under parts brownish-rusty. Length about 4.50 inches; wing, 2.66. Female with the black of head mixed with ashy; beneath paler, more of a muddy-white.

HAB. Whole United States and British Provinces. North to Lake Winnipeg.

HABITS. The common Red-bellied Nuthatch, though nowhere a very abundant species, is found throughout the whole of North America, from Florida to high northern regions, and from ocean to ocean. The Smithsonian Institution possesses specimens from Georgia, Selkirk Settlement, California, and Washington Territory. Mr. Gambel found them quite common in the mountains in the interior of California, in October, roving in company with busy flocks of the *Parus montanus*.

Dr. Cooper met with them abundantly in Washington Territory, where they preferred the oaks and other deciduous trees, and never frequented the interior of the dense forest. He observed this bird and the Slender-billed Nuthatch, along the 49th parallel, east of the Cascade Mountains, as late as the middle of October. Dr. Suckley also met both birds west of the same mountains.

This Nuthatch was observed by Mr. Ridgway among the aspen groves bordering the streams that flow from the East Humboldt Mountains. In that locality it was common through the month of September, though not abundant. It was again seen in June among the pine-woods of the Wahsatch Mountains, but it was not common.

While a few of these birds are resident of the Northern States, they are, to a considerable extent, of migratory habits. Wilson observed them leaving in large numbers for the Southern States in October, and returning again in April. On the 20th of May, 1867, the writer observed a small flock in Eastern Massachusetts, evidently just arrived from the South. They were apparently fatigued and hungry, and paid no attention to the near presence

of workmen engaged in setting beam-poles. They visited and carefully examined each pole, and bored holes into several in search of hidden larvæ, often within a few feet of persons at work.

While on the Pacific coast they are said to prefer the forests of deciduous trees, and to be rarely found in the dark evergreen forests, in the Eastern States they seem to be particularly fond of the seeds of pine-trees, and in the winter are seldom found in the woods of deciduous trees.

They feed in pairs and climb about in all directions, usually in company with the white-breasted species, Chickadees, and the smaller Woodpeckers. They are restless and rapid in their motions, and have a voice at least an octave higher than any other of this family. The note is a monotone, and is unmusical. Mr. Nuttall represents their cry as consisting of three syllables, represented by *dāy-dāy-dāit*, and compares it to the sound of a child's trumpet.

Those wintering at the North occasionally visit farm-yards and orchards, and examine the eaves of outbuildings for food.

Audubon found this species more plentiful in the woods of Maine and Nova Scotia than anywhere else. He never met any south of Maryland, saw none in Newfoundland, and only met with one in Labrador. At Eastport he found a pair breeding as early as the 19th of April, before the Bluebirds had made their appearance, and while ice was still remaining on the northern exposures. An excavation had been made in a low dead stump, less than four feet from the ground, both male and female birds working by turns until they had reached the depth of fourteen inches. The eggs, four in number, were of a white ground-color, tinged with a deep blush when fresh, and sprinkled with reddish dots. They raise but a single brood in a season.

C. S. Paine, of East Bethel, Vt., found a nest of this species about the middle of May, in a small beech-tree, the excavation having been made at the height of twelve feet from the ground. The hole was about as large as that made by the Downy Woodpecker. When first noticed, the bird was looking out of the hole. Having been started out, she flew to a limb close by and watched the party some time. When she flew back, she buzzed before the hole in the manner of a Humming-Bird, and then darted in. While Mr. Paine was looking on, the male came several times to feed his mate, who would meet him at the opening with a clamorous noise, to receive his bounty. The nest contained five eggs.

In Western Massachusetts, Mr. Allen speaks of this species as chiefly a winter resident, appearing the first week in October, and leaving the last of April.

The eggs of this species measure .62 by .48 of an inch, and are of an oblong-oval shape. Their ground-color is a clear crystal white, marked principally about the larger end with a wreath of purple and roseate markings.

Sitta pygmæa, Vig.

PIGMY NUTHATCH.

Sitta pygmæa, VIGORS, Zool. Beechey's Voy. 1839, 25, pl. iv. — AUD. Orn. Biog. V, 1839, pl. cccxv. — Ib. Birds Am. IV, pl. ccl. — REICH. Handb. 1853, 153, tab. dxiv, figs. 3365, 3366. — NEWBERRY, P. R. R. Rep. VI, iv, 1857, 79. — BAIRD, Birds N. Am. 1858, 378; Review, 88. — SECLATER, P. Z. S. 1859, 363 (Xalapa). — Ib. Catal. 1861, 15, no. 93. — COOPER, Orn. Cal. I, 1870, 55.

SP. CHAR. Above ashy-blue; head and upper part of neck greenish ashy-brown, its lower border passing a little below the eye, where it is darker; nape with an obscure whitish spot. Chin and throat whitish; rest of lower parts brownish-white; the sides and behind like the back, but paler. Middle tail-feather like the back; its basal half with a long white spot; its outer web edged with black at the base. Length about 4 inches; wing, 2.40.

HAB. Western and Middle Provinces of United States; south to Xalapa.

This species is closely related to *Sitta pusilla* of the Southern States. The brown of the head has, however, an olivaceous-green tinge not seen in the other; the white spot on the nape less distinct. The middle tail-feather has its basal half white and the outer web edged with black at the base. This black edging is never seen in the other, and the white patch is reduced to a faint trace, only visible in very highly plumaged specimens.

HABITS. This diminutive species of Nuthatch is found throughout our Pacific coast and on the western slope of the Rocky Mountains, from Washington Territory to Southern California. It is also to be found in New Mexico, and specimens have been procured from Mexico.

Dr. Kennerly found them quite abundant in the Sierra Madre and San Francisco Mountains, even as high up as the snow-line, seeking their insect food among the tops of the lofty pines. Dr. Newberry frequently met with these Nuthatches in the most wooded places on his route, where water was near and any considerable amount of animal life visible. He, however, never met with them in the forests of yellow pines. Dr. Gambel mentions their almost extraordinary abundance, in the winter months, in Upper California. Around Monterey, at times, the trees appeared almost alive with them, as they ran up and down and around the branches and trunks, uttering their monotonous and querulous cries. Their note he describes as a repeated whistling *wit-wit*. When one utters this cry, the rest join in. They also have a whistling trill while they are busily searching the tree in every part, and they never leave till they have pretty thoroughly searched every crack.

Dr. Cooper only met with this Nuthatch in the open pine-forests about Fort Colville, near the 49th parallel. They were associated in small flocks about the 20th of October, when there were heavy frosts at night. The chirping noise they made resembled the cries of young chickens. Their habits were very similar to those of the *Psaltriparus minimus*.

Mr. J. K. Lord found this Nuthatch an abundant bird along the entire length of the boundary line from the coast to the Rocky Mountains. It was also common on Vancouver Island. They were seen in large flocks in company with the Chickadees, except during the nesting-time, which is in June. A few were winter residents at Colville, but the greater number left in November. He describes it as a very active bird, always on the move. After nesting they congregate in large flocks and move about from tree to tree, twittering a low sweet note as if singing to themselves, now climbing back downwards along the under sides of the topmost branches of tall pines, searching into every crevice for insects, or, descending to the ground, clinging to the slender flower-stalks for other insects. They nest in June, make a hole in the dead branch of a pine, and deposit their eggs on the bare chips of the wood. This account does not agree with the experience of California ornithologists, who have found a loose nest within the excavation.

Mr. Ridgway found this Nuthatch abundant among the pines of the Sierra Nevada, in the vicinity of Carson City. They were found generally in pairs. Its note is said to greatly resemble the vociferous peeping of some of the small Sandpipers, being sharp, loud, and distinct, and vigorously and continuously uttered, whether climbing or flying. He found it exceedingly hard to discover this bird among the branches, or even when flying, owing to the swiftness and irregularity of its flight. When the female of a pair had been killed, the male bird was extremely loud in his lamentations. Diminutive as this bird is, Mr. Ridgway states that it is also the noisiest of all the feathered inhabitants of the pines, though it is less active in the pursuit of insects than the larger species.

Nests of this bird obtained near Monterey appear to be as well made as those of any of this genus, lining the cavity in which they are placed and conforming to it in size and shape, the materials sufficiently interwoven to permit removal and preservation, and warmly constructed of feathers, wool, vegetable down, hair, and the silky efflorescence of seeds.

Their eggs, seven in number, resemble those of the *S. canadensis*, but are of smaller size and a little more pointed at one end. Their ground-color is crystalline-white. This is covered more or less thickly with red spots, most numerous at the larger end. Their measure varies from .65 by .50 to .60 by .47 of an inch. The first eggs of this bird brought to the notice of naturalists were procured at Fort Crook on the Upper Sacramento of California, and not far from Mount Shasta, by Sergeant John Feilner, U. S. A., forming part of a very extensive collection of birds and eggs transmitted by him to the Smithsonian Institution. Promoted to a lieutenancy for gallant conduct, this gentleman finally attained the rank of captain of cavalry, and was killed by the Sioux during an exploring expedition into Dacotah under General Sully.

Sitta pusilla, LATH.

BROWN-HEADED NUTHATCH.

Sitta pusilla, LATH. Ind. Orn. I. 1799, 263. — WILS. Am. Orn. II. 1810, 105, pl. xv. — AUD. Orn. Biog. II. 1834, pl. cxxv. — IB. Birds Am. IV, pl. cclix. — REICH. Handb. 1853, 153, tab. dxiv, figs. 3567, 3568. — BAIRD, Birds N. Am. 1858, 377; Review, 88. — SCLATER, Catal. 1861, 15.

SP. CHAR. Above ashy-blue; top of head and upper part of neck rather light hair-brown, divided on the nape by white. Eye involved in the brown, which is deeper on the lower border. Beneath muddy-whitish; sides and behind paler than the back. Middle tail-feathers almost entirely like the back. Length of female, 4 inches; wing, 2.50.

HAB. South Atlantic and Gulf States. Ohio! KIRTLAND.

HABITS. The Brown-headed Nuthatch has a much more restricted distribution than the other members of this family in this country. The specimens in the Smithsonian Museum are chiefly from Georgia. Wilson met with it in Virginia, and states that it is found in the other Southern States. I have received its eggs from Cheraw, S. C., and from Florida.

Wilson's description of its habits makes them almost identical with those of *Sitta canadensis*, while its notes are more shrill and chirping. Like that bird, it is very fond of the seeds of the pines. Wherever found, it is a constant resident, and does not migrate.

Audubon states that this bird never goes farther north than Maryland, and that it is the most abundant in Florida, Georgia, and the Carolinas. In Louisiana it is rare, and it is not found in Kentucky. Its notes, he states, are several octaves higher than those of the *carolinensis*, and more shrill, and at least an octave and a half higher than those of the *canadensis*.

Although apparently preferring pines and pine barrens, it by no means confines itself to them, but is not unfrequently seen on low trees and fences, mounting, descending, and turning in every direction, and with so much quickness of motion as to render it difficult to shoot it. It examines every hole and every crevice in the bark of trees, as well as their leaves and twigs, among which it finds abundance of food at all seasons. During the breeding-season they go about in pairs and are very noisy. Their only note is a monotonous cry, described as resembling *dēnd, dēnd*. Mr. Audubon further states that when the first brood leaves the nest, the young birds keep together, moving from tree to tree with all the activity of their parents, who join them when the second brood is able to keep them company. In Florida they pair in the beginning of February, having eggs as early as the middle of that month. In South Carolina they breed one month later. Their nest is usually excavated by the birds themselves in the dead portion of a low stump or sapling, sometimes only a few feet from the ground, but not unfrequently at the height of thirty or forty feet. Both birds are said to work in

concert with great earnestness for several days, until the hole, which is round, and not larger at the entrance than the body of the bird, is dug ten or twelve inches deep, widening at the bottom. The eggs, according to Mr. Audubon, are laid on the bare wood. This, however, is probably not their constant habit. The eggs, from four to six in number, and not much larger than those of the Humming-Bird, have a white ground, thickly sprinkled with fine reddish-brown dots. They are said to raise two, and even three, broods in a season. According to the observations of the late Dr. Gerhardt of Northern Georgia, the Brown-headed Nuthatch breeds in that part of the country about the 19th of April.

The eggs of this Nuthatch are of a rounded oval shape, measuring .60 by .50 of an inch. Their white ground-color is so completely overlaid by a profusion of fine dottings of a dark purplish-brown as to be entirely concealed, and the egg appears almost as if a uniform chocolate or brown color.

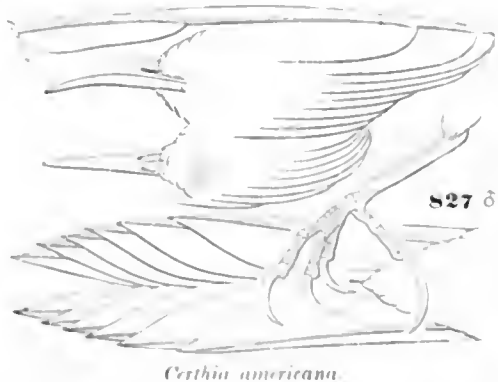
FAMILY **CERTHIADÆ**. — THE CREEPERS.

CHAR. Primaries ten; first very short; less than half the second. Tail long, wedge-shaped, the feathers stiffened and acute. Bill slender, much compressed and curved. Outer lateral toe much longest; hind toe exceeding both the middle toe and the tarsus, which is scutellate anteriorly and very short. Entire basal joint of middle toe united to the lateral.

GENUS **CERTHIA**, LINN.

Certhia, LINNÆUS, Syst. Nat. ed. 10th, 1758, 112. (Type, *C. familiaris*.) (See REICHENBACH, Handbuch, 1, II, 1853, 256, for a monograph of the genus.)

GEN. CHAR. Plumage soft and loose. Bill as long as head, not notched, compressed; all its lateral outlines decurved. Nostrils not overhung by feathers, linear, with an incumbent thickened scale, as in *Troglodytes*. No rictal bristles, and the loreal and frontal feathers smooth, without bristly shafts. Tarsus scutellate anteriorly, shorter than middle toe, which again is shorter than hind toe. All claws very long, much curved and compressed; outer lateral toe much the longer; basal joint of middle toe entirely adherent to adjacent ones. Wings rather pointed, about equal to the tail, the feathers of which are much pointed, with stiffened shafts. Primaries ten; first less than half the second. Nest in holes of trees; eggs white, sprinkled with reddish.



Of the *Certhiidae* but one genus belongs to America, — *Certhia*, with its one small species of considerable variability with locality. The characters above given include both family and generic characters, derived from this one genus. This is readily distinguished by the decurved, compressed bill; absence of notch and bristles; exposed linear nostrils with incumbent scales; connate middle toe, very long claws, short tarsi, pointed and stiffened tail-feathers, etc.

The American and European varieties (they can scarcely be called species) resemble each other very closely, though they appear to be distinguished by such differences as the following: —

The two European races, *C. familiaris* and *C. rostr*, both differ from all the American varieties in having the crissum scarcely tinged with yellowish.



C. familiaris is more ashy beneath than any others, and *C. costæ* is purest white beneath of all. Nearest *C. familiaris*, in the American series, as regards tints of the upper parts, are the Pacific coast specimens of *C. americana*, — while the latter are most like the Atlantic region specimens of the same. *C. mexicana* is to be compared only with the North American forms, though it is the only one approaching *familiaris* in the ashy lower parts.

C. familiaris is at once separated from the rest by having the tail shorter than the wing.

C. costæ is almost precisely like Eastern specimens of *C. americana* in colors, but is absolutely pure white below, and without the distinctly yellowish crissum of the American bird. The bill and claws, however, are considerably longer than in Eastern *americana*, though their size is almost equalled by those of Western specimens; the colors are, however, more decidedly different.

There is never any deviation from the generic *pattern* of coloration; but the variation, *among individuals of each form*, in length of the bill and claws, as well as the tail, is remarkable.

***Certhia familiaris*, var. *americana*, BONAP.**

BROWN CREEPER.

Certhia fusca, BARTON, Fragments of the Natural History of Pennsylvania, 1799, 11. *Certhia familiaris*, VIEILL. Ois. Am. Sept. II, 1807, 70 (not the European bird); also of WILSON and AUDUBON. — MAYNARD, Birds E. Mass. 1870, 93. *Certhia americana*, BONAP. Comp. List. 1838. — REICH. Handb. I, 1853, 265, pl. dext. figs. 4102, 4103. — BAIRD, Birds N. Am. 1858, 372; Review, 89. — MAX. Cab. Jour. 1858, 105. — COOPER & SICKLEY, P. R. R. Rep. XII, II, 1859, 192. — HAMLIN, Pr. Bost. Soc. N. H. 1864-66, 80. *Certhia mexicana*, COOPER, Orn. Cal. I, 1870, 58.

SP. CHAR. Bill about the length of the head. Above dark brown, with a slightly rufous shade, each feather streaked centrally, but not abruptly, with whitish; rump rusty. Beneath almost silky-white: the under tail-coverts with a faint rusty tinge. A white streak over the eye; the ear-coverts streaked with whitish. Tail-feathers brown centrally, the edges paler yellowish-brown. Wings with a transverse bar of pale reddish-white across both webs. Length, 5.50; wing, 2.60; tail, 2.90. (No. 827.)

Young. (5945, Steilacoom, W. T.; Dr. J. S. Cooper.) Resembling the adult, but streaks above indistinct, and the feathers there tipped indistinctly with blackish: the rufous restricted to the upper tail-coverts. Breast and jugulum with very minute blackish wavings or indistinct bars.

HAB. Whole of United States, to Red River Settlement.

Specimens from the far west are purer white beneath, much as in *costæ*, but those from the northwest coast have the white tinged with light rusty. Though purer white below, these specimens are much browner above than Eastern ones, — sometimes more so than in *familiaris*, but then there is the yellowish crissum never seen in this "species," and the proportions are quite different. Thus it will be seen the *C. americana* may always be dis-

tinguished from the other forms; when most resembling *costae* in the grayish tints of the upper plumage (as in Eastern examples), the lower parts are less purely white, and the bill and claws smaller; when like it in the proportions and pure white of the lower parts (as in Western specimens), the colors above are altogether more brown. The yellowish crissum of *americanus* will also distinguish them. Though often resembling *familiaris* in the colors of the upper parts, the latter may always be distinguished by its ashy lower parts without yellowish crissum, the shorter tail, with its less acute feathers, and stouter bill.

C. mexicanus is still more different in colors, for which see that variety.

HABITS. Our common Creeper, so closely resembling the Creeper of Europe as by many to be supposed identical with it, is distributed over the whole of North America, from the Gulf of Mexico to high northern latitudes. At different seasons it may be found in every one of the several States and Territories, yet it is never very abundant. The Smithsonian possesses specimens from various parts of the country, from Georgia to Fort Steilacoom on the Pacific, but of these none appear to have been secured during the period of reproduction. Dr. Heermann found them very common in the more mountainous districts of California. Dr. Cooper found these birds abundant in the forests of Washington Territory, but difficult to detect from the similarity of their color to that of the bark over which they crept. They were apparently constant residents in that Territory. Dr. Suckley, who obtained several specimens of this species in the oak groves in the vicinity of Fort Steilacoom, states that in their habits the Western birds resemble those of the Atlantic States.

Mr. Ridgway found this Creeper inhabiting both the pine forests of the Sierra Nevada, where it was the more common, and also, in winter, among the willows of the river valleys. He did not meet with it east of the Truckee River, nor until he had reached the Wahsatch Mountains.

Dr. Woodhouse found the Brown Creeper generally distributed throughout the Indian Territory, Texas, New Mexico, and California, and adds that it was especially abundant in the San Francisco Mountains of New Mexico.

Dr. Cooper states that he has met with this form in the winter throughout the higher mountains and among the Coast Range as far south as Santa Cruz. He found them chiefly frequenting the coniferous trees, creeping up and down their trunks and branches, searching for insects in their crevices, and so nearly resembling the bark in their general color, that they can be detected only with great difficulty, except when in motion.

He adds that their notes are shrill and wiry, and are often heard when the bird is scarcely visible, without a careful search, their cry appearing to be from a greater distance than the real performer. In March, Dr. Cooper heard them giving out a faint but sharp-toned song, resembling that of a Wren. If Dr. Cooper is correct in his account of the notes, they do not correspond with those of our Eastern bird.

Dr. Kennerly, in his Report on the birds observed by him near the 35th parallel, states that he found our common Creeper very abundant among the rough-barked cedars in the Aztec Mountains. It usually attracted notice, and its place of retreat was discovered, by his hearing its quick and sharp notes. A close and careful search generally enabled him to perceive it proceeding leisurely upward and downward, in straight or spiral lines, toward the top of the tree, dodging dexterously to the opposite side from the observer, and only resuming its occupation when assured of solitude and safety.

The observations of Dr. Kennerly, if they are to be received as characteristic of the Western Creepers, do not correspond with those of our Eastern birds, as far as we have observed them. None of our birds are more easily approached, and when they are pursuing their search for food, none are more regardless of observation. The statement that our Creeper, when watched, moves to the opposite side of the tree from the looker-on, has found a certain currency in our books. We are, however, of the opinion that this is owing to its restless activity, prompting it to constant changes of place and position, and not to its timidity or caution. We have uniformly found them either unconscious or regardless of our near presence.

They are solitary in their habits, and frequent, especially in the summer, deep woods, searching for their favorite food in high places where it is difficult to reach them, but this is no necessary evidence of their shyness. They often hunt for their food in very exposed places, with equal courage and recklessness. It is an active, restless bird, associating with Titmice and the smaller Woodpeckers, moving with great rapidity from side to side and from place to place. They breed in hollow trees, in the deserted holes of the Woodpeckers, and in the decayed stumps and branches of trees. Their nest is a loose aggregation of soft, warm materials, not interwoven, but simply collected with regard to no other requisite than warmth.

In the summer of 1851 our party, in their visit to one of the smaller Grand Menan Islands, was so fortunate as to meet with the nest of this bird. It was built in a decayed birch-tree, only a few feet from the ground, and contained five eggs nearly ready to hatch. This was on the 20th of June. The nest was an intermingling of decayed wood, the fur of small quadrupeds, and feathers, but with so little adherence or consistency of form that it was impossible to retain the materials in position after removal.

So far from evincing any timidity, the birds refused to leave their nest, and could hardly be prevented from following it when removed from the woods to a house on the island. One of our companions, returning to the woods in order to secure the birds for the sake of identification, found the pair still lingering round the place of their rifled nest. Upon his approach they began to circle round his head with reproachful cries, and continued to keep so close to him that it was impossible to shoot one without mutilating it. At length one of the birds alighted on a small branch held over his head by a lad who accompanied him, and in this position was secured by shooting it

with a pistol loaded with the finest shot. Its mate could have been secured, as she persisted in pursuing them, but she was not molested. Throughout there was not a trace of timidity on the part of either bird, but the most reckless and daring devotion.

Besides the single call-note or the sharp outcry with which the Creepers signalize their movements, and which they utter from time to time as they rapidly and busily move up and down the trunks and limbs, or flit from tree to tree, they have been generally regarded as having no song. But this is not the fact. The careful observations of Mr. William Brewster of Cambridge have satisfied him that these birds have a very distinct and varied song. During the winter these birds are not uncommon in the vicinity of Boston, coming about the houses with all the tameness and confidence of the *Parus atricapillus*, and permit a very near approach. They are very easily attracted by suspending from a piazza a piece of fat meat. Mr. Brewster has observed them commence singing as early as the 14th of March. Their notes are varied and warbling and somewhat confused; some of them are loud, powerful, and surpassingly sweet, others are more feeble and plaintive; their song usually ends with their accustomed cry, which may be represented by *crēē-crēē-crē-ēp*. Mr. Brewster, besides repeatedly hearing them sing in Massachusetts in the early spring, has also listened to their song in Maine in the month of June.

Their eggs are small in proportion to the size of the bird, are nearly oval in shape, with a grayish-white ground, sparingly sprinkled with small, fine, red and reddish-brown spots. They measure .55 by .43 of an inch.

Certhia familiaris, var. *mexicana*, GLOG.

MEXICAN CREEPER.

Certhia mexicana, "GLOGER, Handbuch," REICHENBACH, Handbuch, 1, 1853, 265, pl. dlxii, figs. 3841, 3842. — SCLATER, P. Z. S. 1856, 290; 1858, 297; 1859, 362, 372. — SALVIN, Ibis, 1866, 120 (Volcan de Fuego, Guat.). — BAIRD, Birds N. Am. 1858, 373 (under *C. americana*), pl. lxxxiii, fig. 2; Review, 90.

SP. CHAR. Ground-color above very dark sepia-brown, each feather with a sharply defined medial streak of grayish-white, these streaks becoming broader posteriorly, where they are discontinued at the beginning of the rump. Whole rump and upper tail-coverts chestnut-rufous. Beneath pale ashy, becoming almost white on the throat; crissal feathers deep ochraceous except at the tips, which are whitish. Markings of the wings as usual. Measurements (8176, Mexico): wing, 2.50; tail, 2.70; bill (from nostril), .48; hind claw, .30.

HAB. Guatemala and Mexico; probably extending along the table-lands into the United States.

This is one of the best marked of the various races that have been discussed (see p. 124). The ground-color of the upper parts is altogether darker than in any of the others, and the streaks are more sharply defined and nar-

rower; the rufous of the rump is of a castaneous, instead of yellowish cast; the wings appear more uniform with the back, owing to the dark color of the latter, and their pale markings have little of that yellowish tinge so noticeable in the others. In the ashy tinge of the lower parts there is a resemblance to *familiaris* of Europe; but the latter has not the ochraceous erisum so noticeable in the present bird. There is little resemblance to Western and Rocky Mountain specimens of the *C. americana*; and if these are to be considered as separable from the Eastern (which, however, would not, in our opinion, be advisable) they must not be referred to *mexicana*.

The Mexican Creeper is introduced here on account of the probability of its occurrence in the Southern Rocky Mountains.

HABITS. Mr. Salvin found the Mexican Tree-Creeper by no means uncommon in the pine forests of the upper zone of the Volcan de Fuego. He also observed it frequenting pine-trees in the district of Chilasco, Vera Paz, at about 6,000 feet above the sea.

FAMILY TROGLODYTIDÆ. — THE WRENS.

CHAR. Rictal bristles wanting; the loreal feathers with bristly points; the frontal feathers generally not reaching to nostrils. Nostrils varied, exposed or not covered by feathers, and generally overhung by a scale-like membrane. Bill usually without notch (except in some Middle American genera). Wings much rounded, about equal to tail, which is graduated. Primaries ten, the first generally about half the second. Basal joint of middle toe usually united to half the basal joint of inner, and the whole of that of the outer, or more. Lateral toes about equal, or the outer a little the longer. Tarsi scutellate.

The impossibility of defining any large group of animals, so as to separate it stringently and abruptly from all others, is well understood among naturalists; and the *Troglodytidae* form no exception to the rule. Some bear so close a resemblance to the Mocking Thrushes as to have been combined with them; while others again exhibit a close approximation to other subfamilies. The general affinities of the family, however, appear to be to the *Turdidae*, and one of the best characters for separating the two families appears to exist in the structure of the feet.

In the *Turdidae* the basal joint of the outer lateral toe is united to the middle toe, sometimes only a part of it; and the inner toe is cleft almost to its very base, so as to be opposable to the hind toe, separate from the others. In the *Troglodytidae*, on the contrary, the inner toe is united by half its basal joint to the middle toe, sometimes by the whole of this joint; and the second joint of the outer toe enters wholly or partially into this union, instead of the basal joint only. In addition to this character, the open, exposed nostrils, the usually lengthened bill, the generally equal lateral toes, the short rounded wings, the graduated tail, etc., furnish points of distinction.

Genera.

A. Lateral toes very unequal.

a. Culmen depressed basally, the interval between the nostrils wider than the much compressed anterior half of the bill. Plate on the posterior half of the tarsus continuous. **Catherpes.**

b. Culmen compressed basally, the interval between the nostrils narrower than the rather depressed anterior half of the bill. Plate on the posterior half of the tarsus broken into smaller scales. **Salpinctes.**

B. Lateral toes equal.

c. Length about 8 inches. **Campylorhynchus.**

d. Length less than 6 inches.

Bill abruptly decurved or hooked at the tip. Outstretched feet not reaching near to end of tail. **Thryothorus.**

Tail longer than the wing, the feathers black, variegated terminally with whitish Subgenus *Thryomanes*.

Tail shorter than the wing, the feathers rusty, not variegated with whitish Subgenus *Thryothorus*.

Bill only gently curved at the tip. Outstretched feet reaching nearly to or beyond the end of the tail.

Back without streaks. No distinct superciliary stripe. **Troglodytes.**

Bill curved, sub-conical. Tail as long as wing. Subgenus *Troglodytes*.

Bill straight, subulate. Tail much shorter than wing.

Subgenus *Anorthura*.

Back streaked with black and white. **Cistothorus.**

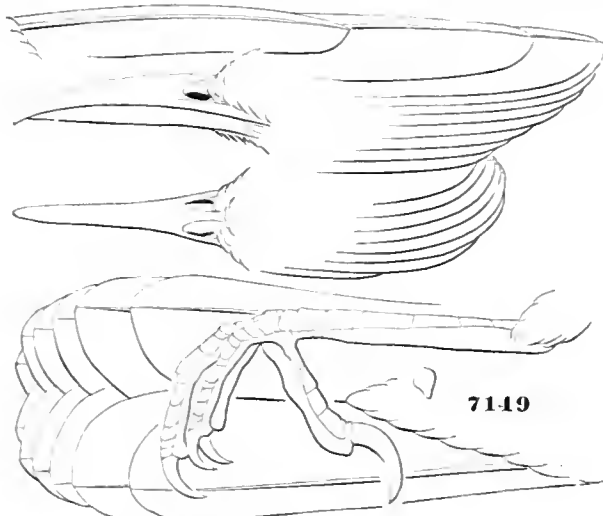
Bill short, stout; its depth equal to one half its length from the nostril; gonys straight or even convex, ascending. Crown streaked; no distinct superciliary stripe. Subgenus *Cistothorus*.

Bill elongated, slender; its depth less than one third its length from the nostril; gonys slightly concave, declining. Crown not streaked; a conspicuous superciliary stripe. Subgenus *Telmatodytes*.

GENUS **CAMPYLORHYNCHUS**, SPIN.

Campylorhynchus, SPIN, Av. Bras. 1, 1824, 77. (Type, *C. scolopaceus*, SPIN = *Turdus variegatus*, GMEL.)

GEN. CHAR. Bill stout, compressed, as long as, or longer than the head, without notch or rictal bristles; culmen and commissure curved; gonys nearly straight. Nostrils in the antero-inferior part of nasal groove, in advance of the frontal feathers, with an overhanging scale with thickened edge, as in *Thryothorus*; sometimes, as in the type, reduced to a slight ridge along the upper side of the nasal groove. Lateral septum not projecting below or anteriorly into the nasal cavity, but concealed by the nasal scale. Tarsus a little longer than middle toe and claw; claws strong, much curved, and very sharp; middle toe with basal joint adherent almost throughout. Wings and tail about equal, the latter graduated; the exterior webs of lateral feathers broad.



Campylorhynchus brunneicapillus.

This genus embraces the largest species of the family, and is well represented in Middle and South America, two species only reaching into North America, which may be distinguished as follows:—

Top of head and post-ocular stripe reddish-brown; back streaked longitudinally and linearly with white. All the feathers beneath conspicuously spotted. Crissum and flanks with rounded or elongated spots. Iris reddish. Nostrils inferior, linear, overhung by a scale. Nests large and purse-shaped; eggs white, profusely marked with salmon-colored or reddish spots.

a. Spots much larger on throat and jugulum than elsewhere. Inner webs of second to fifth tail-feathers (between middle and outer feathers) black, except at tips. Length, 8.00; wing, 3.40; tail, 3.55. *Hab.* Adjacent borders of United States and Mexico *brunneicapillus*.

b. Spots on throat and jugulum little larger than elsewhere. Inner webs of intermediate tail-feathers banded with white like the outer. Length, 7.50.

Hab. Cape St. Lucas *affinis*.

Campylorhynchus brunneicapillus, GRAY.**CACTUS WREN.**

Picolaptes brunneicapillus, LAFRESNAYE, Mag. de Zool. 1835, 61, pl. xlvii. — LAWRE, Ann. N. Y. Lyc. V, 1851, 114. — CASSIN, Birds Cal. Tex. 1854, 156, pl. xxv. — HEERMANN, J. A. N. Sc. 11, 1853, 263. *C. brunneicapillus*, GRAY, Genera, I, 1847, 159. — BR. Consp. 1850, 223. — SEL. P. A. N. S. 156, 264. — BAIRD, Birds N. Am. 1858, 355; Pr. Phil. Acad. 1859, 3, etc.; Rev. 99. — HEERMANN, P. R. R. X, 1859. — DRESSER, Ibis, 1865, 482 (Texas). — COOPER, Orn. Cal. I, 1870, 61.

SP. CHAR. Bill as long as the head. Above brown; darkest on the head, which is unspotted. Feathers on the back streaked centrally with white. Beneath whitish, tinged with rusty on the belly; the feathers of the throat and upper parts, and under tail-coverts, with large rounded black spots; those of the remaining under parts with smaller, more linear ones. Chin and line over the eye white. Tail-feathers black beneath, barred subterminally (the outer one throughout) with white. Iris, reddish-yellow. Length, 8 inches; wing, 3.40; tail, 3.55.

HAB. Adjacent borders of the United States and Mexico, from the mouth of the Rio Grande to the Valley of the Colorado, and to the Pacific coast of Southern California. Replaced at Cape St. Lucas by *C. affinis*.

This species is found abundantly along the line of the Rio Grande and Gila, extending northward some distance, and everywhere conspicuous by its wren-like habits and enormous nest.

HABITS. The Brown-headed Creeper is a comparatively recent addition to the fauna of the United States, but appears to be common along the southwestern borders of the United States, from the valley of the Rio Grande to San Diego, in California. In Lower California it is replaced by the *C. affinis*.



Campylorhynchus brunneicapillus

It was first added to our avifauna by Mr. Lawrence in 1851, on the strength of a specimen obtained in Texas by Captain McCown.

Dr. Heermann, in his paper on the Birds of California, speaks of finding it in the arid country back of Guymas, on the Gulf of California. This country, presenting only broken surfaces and a confused mass of volcanic rocks, covered by a scanty vegetation of thorny bushes and cacti, among other interesting birds, was found to contain this species in abundance. He describes it as a lively, sprightly species, uttering, at intervals, clear, loud, ringing notes. Its nest, composed of grasses and lined with feathers, was in the shape of a long purse, enormous for the size of the bird, and laid flat between the forks or on the branches of a cactus. The

entrance was a covered passage, varying from six to ten inches in length. The eggs, six in number, he described as being of a delicate salmon-color, very pale, and often so thickly speckled with ash and darker salmon-colored spots as to give quite a rich cast to the whole surface of the egg.

Lieutenant Couch met with these birds near Monterey. He states that they have a rich, powerful song. Of the nest he gives substantially the same description as that furnished by Dr. Heermann.

The eggs are of an oblong-oval shape, slightly more pointed at one end, and are so equally and generally covered, over a white ground, with fine salmon-colored spots, as to present a uniform and almost homogeneous appearance. They vary in length from an inch to 1.02 inches, and have an average breadth of .68 of an inch.

***Campylorhynchus affinis*, XANTUS.**

THE CAPE CACTUS WREN.

Campylorhynchus affinis, XANTUS, Pr. A. N. Sc. 1859, 298 (Cape St. Lucas). — BAIRD, Pr. A. N. Sc. 1859, 303; Rev. 100. — Sci. Catal. 1861, 17, no. 108. — ELLIOT, Illust. B. N. A. 1, IV. — COOPER, Orn. Cal. I, 1870, 62.

SP. CHAR. Cap of head reddish-brown; the concealed centres of feathers dusky. Rest of upper parts grayish-brown, all the feathers of body and scapulars with broad central or shaft streaks of whitish edged with black; the streaks irregular in outline, on some feathers nearly linear, in others widening at intervals along the shaft. Outer webs of the wing-feathers crossed by about seven rows of whitish semicircular spots, with corresponding series of more circular ones on the inner web. Tail-feathers black, all of them with a series of about eight quadrate white spots on each web, which are alternate to each other, not opposite, and extend from or near the black shaft to the edge; the extreme tips of the feathers black; the two central feathers, however, more like the back, with irregular mottling of grayish and black. Upper tail-coverts barred transversely with black.

Under parts white, faintly tinged with rusty posteriorly; each feather spotted with black, excepting on the immaculate chin. These spots are rather larger and more quadrate on the jugulum, where they are sometimes on the sides of the feathers (on one or both sides); posteriorly, however, they are elongated or tear-shaped, and strung along the shaft, one or two on each. On the crissum they are large and much rounded, three or four on each longer feather. Legs rather dusky. Bill lead-color, pale at the base below; iris reddish-brown. A broad white stripe from bill over the eye and nape; edged above and below with black; line behind the eye like the crown; cheek-feathers white, edged with blackish.

Immature specimens exhibit a tendency to a whitish spotting in the ends of the feathers of the cap. A very young bird does not, however, differ materially, except in having the spots less distinct beneath, the white streaks less conspicuous above, the white of the wings soiled with rufous. Specimens vary considerably in the proportional as well as absolute thickness and length of the bill; thus, No. 32,167 measures .80 from nostril to end of bill, instead of .60, as given below for No. 12,965.

12,965. Total length, 7.50; wing, 3.30; tail, 3.40; its graduation, .45; exposed portion of first primary, 1.42, of second, 2.15, of longest, or fourth (measured from exposed base of first primary), 2.45; length of bill from forehead, .90, from nostril, .60; along gape, 1.07;

tarsus, 1.02; middle toe and claw, .90; claw alone, .25; hind toe and claw, .76; claw alone, .35.

HAB. Only observed at Cape St. Lucas, Lower California.

This species is most nearly allied to *C. brunneicapillus*; the most apparent difference at first sight being in the greater concentration of black on the throat and jugulum in *brunneicapillus*, and the much smaller size of the remaining spots on the under parts, with the decided light-cinnamon of the posterior portion of the body. The outer and central tail-feathers alone are marked as in *C. affinis*, the intermediate ones being entirely black, with the exception of a white subterminal band.

This is one of the most characteristic birds constituting the isolated fauna of Cape St. Lucas. Like nearly all the species peculiar to this remarkable locality, it is exceedingly abundant, breeding in immense numbers. It has not yet been detected elsewhere, though it may possibly be found on the Lower Colorado.

HABITS. This recently described species was first discovered by Mr. Xantus, and has, so far as is known, a somewhat restricted locality, having been met with only at the southern extremity of Lower California, where it is an exceedingly abundant bird. Mr. Xantus has published no observations in regard to its habits, which, however, are probably very nearly identical with those of the more common species. From the brief memoranda given by him in the general register of his collections, made at Cape St. Lucas, we gather that their nests were built almost exclusively in opuntias, cacti, and the prickly pear, and were generally only four or five feet from the ground, but occasionally at the height of ten feet.

The nests are large purse-shaped collections of twigs and coarse grasses, very similar to, and hardly distinguishable in any respect from, those of the more northern species. The eggs vary from 1.05 to 1 inch in length, and from .65 to .70 of an inch in breadth, and have a reddish-white ground very uniformly dotted with fine markings of reddish-brown, purple, and slate.

SUBGENUS **SALPINCTES**, CABANIS.

Salpinctes, CABANIS, Wiegmann's Archiv, 1847, 1, 323. (Type, *Troglodytes obsoletus*, SAY.)

GEN. CHAR. Bill as long as the head; all the outlines nearly straight to the tip, then decurved; nostrils oval. Feet weak; tarsi decidedly longer than the middle toe; outer lateral toe much longer, reaching to the base of the middle claw, and equal to the hinder. Wings about one fifth longer than the tail; the exposed portion of the first primary about half that of the second, and two fifths that of the fourth and fifth. Tail-feathers very broad, plane, nearly even or slightly rounded; the lateral moderately graduated.

Of this genus but one species is so far known in the United States, the Rock Wren of the earlier ornithologists. It is peculiar among its cognate

genera by having the two continuous plates on each side the tarsus divided into seven or more smaller plates, with a naked interval between them and the anterior scutellæ. Other characters will be found detailed in the Review of American Birds, p. 109.

Salpinctes obsoletus, CABAN.

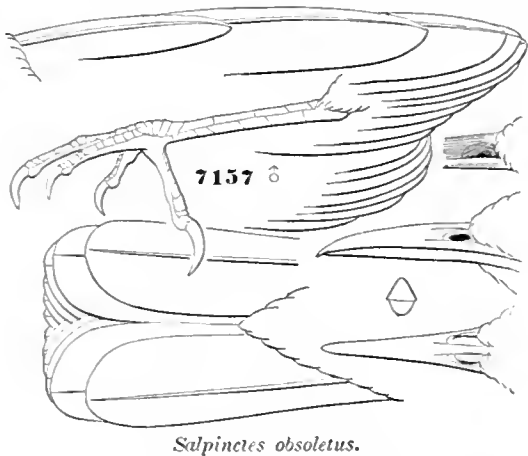
ROCK WREN.

Troglodytes obsoletus, SAY, Long's Exped. II, 1823, 4 (south fork of Platte). — AUD. Orn. Biog. IV, pl. cccx. — IB. B. A. II, pl. cxvi. — NEWBERRY, P. R. R. Rep. VI, iv, 1857, 80. — HEERMANN, P. R. R. Rep. X, 1859, 41. *Salpinctes obsoletus*, CAB. Wiegmann's Archiv, 1847, 1, 323. — BAIRD, Birds N. Am. 1858, 357; Rev. 110. — SCLATER, P. Z. S. 1859, 371 (Oaxaca). — COOPER, Orn. Cal. I, 1870, 64. ? *Troglodytes latifasciatus*, LICHT. Preis-Verzeich. 1831, no. 82.

SP. CHAR. Plumage very soft and lax. Bill about as long as the head. Upper parts brownish-gray, each feather with a central line and (except on the head) transverse bars of dusky, and a small dull brownish-white spot at the end (seen also on the tips of the secondaries). Rump, sides of the body, and posterior part of belly and under tail-coverts dull cinnamon, darker above. Rest of under parts dirty white; feathers of throat and breast with dusky central streaks. Lower tail-coverts banded broadly with black. Inner tail-feathers like the back, the others with a broad black bar near the end; the tips cinnamon; the outer on each side alternately banded with this color and black. A dull white line above and behind the eye. Iris brown. Length, 5.70; wing, 2.82; tail, 2.40. Young not marked or banded beneath. Eggs white, spotted with red.

HAB. Central regions of the United States, to Mexico, east to mouth of Yellowstone River. Cape St. Lucas. Not recorded from Pacific slope. W. Arizona, COUES. Oaxaca, SCLATER.

HABITS. The Rock Wren, so far as its distribution is known, is principally restricted to the high central plains of the Rocky Mountains, from Nebraska to the coast ranges near the Pacific, and from Oregon to Mexico and Lower California. According to Dr. Cooper it is an abundant species throughout the dry, rocky, and barren districts of California, especially in the southern portions, where it comes nearer the coast. They are numerous among the plains on both sides of the Rocky Mountains. Their favorite places are among the rocks, where they are always busily engaged in hunting for insects in the crevices. Dr. Cooper found nests at San Diego in cavities under the tiled roofs of houses, but they all contained young as early as May. At Fort Mojave they began to sing in February, and their song continued throughout the spring. They range to a high elevation among the moun-



tain, having been found by Dr. Newberry at Klamath Lake in Oregon. Dr. Cooper does not describe their song, but Dr. Heermann speaks of it as only a very weak trill. The latter met with them in the mountainous districts of



Salpinctes obsoletus

California, where they were searching for their food among the crevices of the rocks. He afterwards met with them in New Mexico and Texas. They were quite abundant in the Tejon Valley, passing in and out, among and under the boulders profusely scattered over the mountains, searching for spiders, worms, and small insects, in pursuit of which they uttered at intervals a loud and quick note of a peculiarly thrilling character. Lieutenant Couch found them in the sand-

stone ranges near Patos, in the province of Coahuila. Some of their habits are spoken of as sparrow-like, and, while they have the usual wren-like grating noises, they also possess a song of great variety and sweetness.

Dr. Kennerly met with them among the bushes in the vicinity of the Rio Grande. Their flight he describes as short, the bird generally soon alighting on the ground and running off very rapidly.

This Wren was first discovered by Mr. Say near the Arkansas River, inhabiting a sterile district devoid of trees, hopping along the ground or flitting through the low, stunted junipers on the banks of the river, usually in small flocks of five or six. Nuttall afterwards found them in July on the Western Colorado. The note of the female was *charr-charr-to-igh*, with a strong guttural accent, and with a shrill call similar to the note of the Carolina Wren. The old birds were feeding a brood of five young, which, though full grown, were cherished with querulous assiduity. He found them nesting among the rocky ledges, in the crevices of which they hide themselves when disturbed. Mr. Nuttall also met with this species near Fort Vancouver. Mr. Salvin states that in several instances it has been met with in Guatemala.

The eggs of this Wren obtained by Dr. Palmer in Arizona have a clear white ground, sparingly spotted with well-defined, distinct dottings of brownish-red. These are chiefly distributed around the larger end. They vary somewhat in size and shape, some being of a more rounded form, though all have one end more pointed than the other. The length is pretty uniform, .77 of an inch. The breadth varies from .60 to .66 of an inch. They are larger and more oblong than the eggs of any other Wren, except perhaps the *mexicanus*, and bear little resemblance to any other eggs of this family with which I am acquainted, except those of the Winter Wren, and the egg attributed to *T. americanus*.

The nest is homogeneous in structure, composed entirely of thin strips of reddish-colored bark and fine roots, interspersed with a few small bits of wool. It is distorted by packing, so that measurements of it would be valueless; its dimensions in its pressed condition are: diameter, 5 inches; depth, 2 inches. The cavity is shallow and saucer-shaped.

From Mr. Ridgway we learn that from the summit of the Sierra Nevada eastward, as far as the party explored, he found this Wren universally distributed. In the middle provinces of the Rocky Mountains it was the most abundant species of the family, but was not so abundant in the Wahsatch Mountains. The general resort of this species was among rocky or stony hill-slopes, though it was not confined to such localities. At Carson City he found it particularly partial to the rubbish of the decaying pine-logs. At Virginia City it was the only Wren seen frequenting the old buildings and abandoned mining-shafts, in its predilection for such places reminding him very much of the *Thryothorus ludovicianus*, which in its manners it very strongly resembles.

Mr. Ridgway noticed a wonderful variety in the notes of this Wren. Its peculiarly guttural *turce* was repeatedly heard, and its song in spring had a slight resemblance in modulation to that of the Carolina Wren, though altogether lacking the power and richness so characteristic of the superb song of that bird. Frequently its song was changed into a prolonged monotonous trill, similar to the tremulous spring-call of the *Junco hyemalis*.

This species is not so wary as the *Catherpes mexicanus*. Upon suddenly starting up an individual of this kind, he would fly to the nearest boulder, turn with his breast towards the party, swing oddly from side to side, all the while ludicrously bowing and scolding the intruder with his peculiar sharp expressions of displeasure.

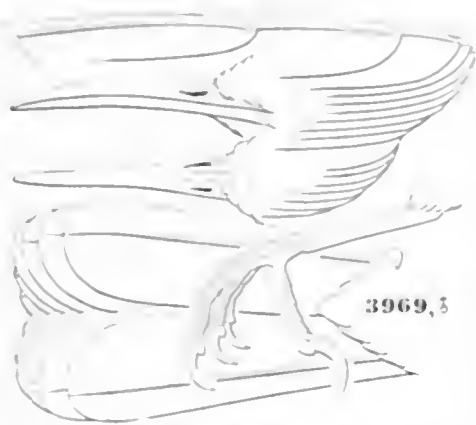
Dr. Cooper, in his paper on the Fauna of the Territory of Montana, states that he observed this bird occasionally through the main Rocky Mountain chain to near the crossing of the Bitterroot, but it was less common than among the cliffs and rocks of the barren plain along their eastern slope. Though he did not find it in the western part of Washington Territory, he has no doubt that it frequents parts of the rocky cañons of the Columbia Plain. A nest with nine eggs was found in a log-cabin below Fort Benton.

GENUS **CATHERPES**, BAIRD.

Catherpes, BAIRD, Birds N. Am. 1858, 357. (Type, *Thryothorus mexicanus*, Sw.)

GEN. CHAR. Bill longer than the head, slender; all the outlines nearly straight to the tip, then gently decurved, gonys least so; nostrils linear; tarsus short, about equal to the middle toe, which reaches to the middle of the middle claw. Outer toe considerably longer than the inner, reaching beyond the base of the middle claw. Wings a little longer than the tail; the exposed portion of the first primary about half that of the fourth and

fifth. Tail-feathers very broad and perfectly plane; tail nearly even; the two lateral graduated; the outer about eleven twelfths of the middle.



Catherpes mexicanus.

This genus agrees with *Salpinctes* in the broad, plane tail-feathers, but the bill is much longer, the nostrils linear, not oval, the feet much stouter, the outer toe rather longer; the tarsus shorter, being equal to the middle toe, not longer; the hind toe much longer than the outer lateral, instead of equal to it. The wings are but little longer than the tail, and shorter than in *Salpinctes*.

This genus is confined to the western portions, where a single species, *C. mexicanus*, occurs in two well-marked varieties:—

C. mexicanus.

Culmen almost straight, the tip decurved, gonys straight. Above blackish-brown; wings and back sparsely sprinkled with minute white specks; *no such markings on head or neck.* Bars on tail very broad, .12 in width on outer feathers. Wing, 2.84; tail, 2.40; culmen, .96; tarsus, .75; middle toe, .68; posterior, .47; outer, .52; inner, .49 (52,791, Mazatlan, Mexico). *Hab. Mexico* *var. mexicanus.*

Culmen and gonys both gently curved, the latter somewhat concave. Above cinnamon-ashy, more reddish on rump and wings; head and neck above with numerous dots of white; very few of these on back and wings. Tail-bars very narrow and thread-like. Wing, 2.48; tail, 2.12; culmen, .83; tarsus, .56; middle toe, .52; posterior, .35; outer, .44; inner, .36 (53,425 ♂, Fort Churchill, Nevada). *Hab. Middle (and Pacific?) Province of United States.* *var. conspersus.*

In *var. mexicanus* the white of throat is more abruptly defined against the rufous of abdomen than in *var. conspersus*, in which the transition is very gradual. The latter has the secondaries rufous with narrow isolated bars of black; the former has them blackish, *indented* on lower webs with dark rufous. In *mexicanus* the feet are very stout, and dark brown; in *conspersus* they are much weaker, and deep black.

All specimens from south of the United States (including Giraud's type of *Certhia albifrons*) belong to the restricted *mexicanus*, while all from the United States are of the *var. conspersus*.



Catherpes mexicanus

Catherpes mexicanus, var. conspersus, RIDGWAY.**CAÑON WREN; WHITE-THROATED ROCK WREN.**

Troglodytes mexicanus, HEERMANN, J. A. N. Sc. 2d ser. II, 1853, 63. — IB. P. R. R. Rep. X, 1859, 41. — CASSIN, Illust. Birds Cal. I, 1854, 173, pl. xxx. *Catherpes mexicanus*, BAIRD, Birds N. Am. 1858, 356 (in part); Rev. III (in part). — COOPER, Orn. Cal. I, 1870, 66. *Catherpes mexicanus* var. *conspersus*, RIDGWAY.

SP. CHAR. (No. 53,125 ♂, near Fort Churchill, Nevada, December 7, 1867; R. RIDGWAY). Above, brownish-ashy on the anterior, and bright cinnamon-rufous on the posterior half, the two colors shading insensibly together. The anterior, or grayish portion thickly sprinkled with numerous small circular dots of white, each preceded by a smaller speck of dusky; a few of these dots on the rump. Wings with obsolete, ragged, narrow, *isolated* bars of dusky, these most sharply defined on the secondaries. Tail clear rufous, crossed with about nine very narrow, thread-like, somewhat zigzag bars of black, — these about .02 wide on the middle, and .07 on the outer feather. Beneath, anterior third, pure silky-white, shading insensibly into soft ochraceous on the breast, this soon darkening into deep ferruginous, the color of all the posterior lower parts; the whole of this ferruginous surface, with very obsolete transverse spots of white, each preceded by a narrower dusky one. Length, 5.75; extent of wings, 7.50 (fresh); wing, 2.48; tail, 2.13; culmen, .83; tarsus, .56. Bill deep slate, paler, and with lilaceous tinge, at base of lower mandible; iris umber; tarsi and toes black (fresh colors).

HAB. Central region of North America, from boundary of United States northward. Extends up Valley of Colorado. Western Nevada, resident; RIDGWAY.

The above characters apply to all specimens of *Catherpes* from north of Mexico, as substantiated by a sufficient series in the collection. It is a remarkable fact that this northern race should be so much smaller than the Mexican one, especially in view of the fact that it is a resident bird in even the most northern parts of its ascertained habitat.

HABITS. The geographical distribution of this race of the White-throated Wren, so far as known, is confined to the line of the United States and Mexican boundary, extending northward up the Valley of the Colorado, as far as Western Nevada. The corresponding Mexican race reaches some distance southward, but has not yet been detected beyond the limits of Mexico. The habits of both races, however, are quite similar, as far as known.

Dr. Heermann first met with this Wren in the spring of 1851, on the Cosumnes River. In the following year he procured three specimens on the Calaveras River. He describes it as an active, sprightly bird, having a loud and pleasing song that may be heard a great distance, and which it repeats at short intervals. When found, it was occupied with searching for insects, between and under the large boulders of rock that, in some portions of the river, are thrown together in confused masses, as if by some terrific convulsion of nature.

Dr. Kennerly also met with this species in similar localities among the hills bordering upon the Big Sandy, where the rocks are also described

as piled up thick and high. They were darting from rock to rock and creeping among the crevices with great activity, constantly repeating their peculiar and singular note. The great rapidity of their motions rendered it difficult to procure a specimen. He did not observe this bird anywhere else.

Their occurrence equally in such wild and desolate regions and in the midst of crowded cities indicates that the abundance of their food in either place, and not the absence or presence of man, determines this choice of residence. When first observed they were supposed to nest exclusively in deep and inaccessible crevices of rocks, where they were not likely to be traced. Mr. H. E. Dresser afterwards met with its nest and eggs in Western Texas, though he gives no description of either. He found this species rather common near San Antonio, where it remained to breed. One pair frequented a printing-office at that place, an old half-ruined building, where their familiar habits made them great favorites with the workmen, who informed him that the previous spring they had built a nest and reared their young in an old wall close by, and that they became very tame. At Dr. Heermann's rancho on the Medina he procured the eggs of this bird, as well as those of the Louisiana and Bewick's Wren, by nailing up cigar-boxes, with holes cut in front, wherever these birds were likely to build.

Mr. Sumichrast describes its nest¹ as very skilfully wrought with spiders' webs, and built in the crevices of old walls, or in the interstices between the tiles under the roofs of the houses. A nest with four eggs, supposed to be those of this species, was obtained in Western Texas by Mr. J. H. Clark; it was cup-shaped, not large, and with only a slight depression. The eggs, four in number, were unusually oblong and pointed for eggs of this family, and measured .80 by .60 of an inch, with a crystalline-white ground, profusely covered with numerous and large blotches of a reddish or cinnamon brown.

So far as the observations of Mr. Ridgway enabled him to notice this bird, he found it much less common than the *Salpinctes obsoletus*, and inhabiting only the most secluded and rocky recesses of the mountains. Its common note of alarm is described as a peculiarly ringing *dink*. It has a remarkably odd and indescribably singular chant, utterly unlike anything else Mr. Ridgway ever heard. This consisted of a series of detached whistles, beginning in a high fine key, every note clear, smooth, and of equal length, each in succession being a degree lower than the preceding one, and only ending when the bottom of the scale is reached. The tone is soft, rich, and silvery, resembling somewhat the whistling of the Cardinal Grosbeak.

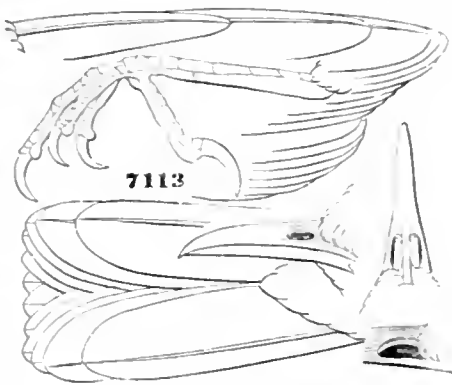
It was often seen to fly nearly perpendicularly up the face of a rocky wall, and was also noticed to cling to the roof of a cave with all the facility of a true Creeper.

¹ This remark applies to the Mexican race

GENUS **THRYOTHORUS**, VIEILL.

Thryothorus, VIEILLOT, Analyse, 1816, 45. (Type, *Troglodytes arundinaceus*, "*Troglodyte des Roseaux*," VIEILL. Ois. Am. Sept. II, 1807, 55 = *Sylvia ludoviciana*, LATH.)

GEN. CHAR. Bill compressed, rather slender; height about one fourth the length above. Culmen and commissure gently curved throughout; gonys straight; tip very obsoletely notched. Nostrils in the lower edge of anterior extremity of the nasal groove, narrowly elliptical, overhung by a stiff scale-like roof of the thickened membrane of the upper part of the nasal groove, the crescentic edge rounded. The septum of nostrils imperforate; the posterior part of the nasal cavity with a short septum projecting into it parallel with the central, not perpendicular as in *Microcerculus*. Wings and tail about equal, the latter moderately rounded; the first primary more than half the second, about half the longest. Tarsi rather short, scarcely exceeding middle toe. Anterior scutellæ distinct, rest of each side of tarsi in a continuous plate. Lateral toes equal.



Thryothorus ludovicianus.

The diagnoses of the North American species are as follows: —

Species and Varieties.

COMMON CHARACTERS. Head above, and back, of much the same color. Crissum barred transversely; rest of under parts plain. Upper tail-coverts and exposed surface of wings barred. Iris hazel. Nest in holes or with an arched covering. Eggs reddish-white, spotted with red and purple.

a. *Thryothorus*.

T. ludovicianus. Tail-feathers reddish-brown, barred with black. Greater wing-coverts spotted with whitish.

Beneath yellow-whitish, washed occasionally with rusty. Sides plain. Bill from nostril, .45. Length, 6.00. *Hab.* Eastern Province United States var. *ludovicianus*.

Beneath rufous; lighter on throat and along median line. Sides obsoletely barred with dusky. Bill from nostril, .56. Length, 5.25. *Hab.* Lower Rio Grande. var. *berlandieri*.

b. *Telmatodytes*.

T. bewickii. Tail-feathers, except central, black; the exposed surface and tips only varied with white. Length, 5.50.

Above dark rufous-brown; beneath plumbeous-white; flanks tinged with brown. Rump and exposed secondaries distinctly banded. Quills and middle tail-feathers brownish-black. Length from nostril, .39; along gape, .70. *Hab.* Eastern Province United States. var. *bewickii*.

Above ashy-brown; beneath, including flanks, clear white; rump ashy, and, like secondaries, very obsoletely barred. Quills and middle tail-feathers grayish-brown. *Hab.* Southern border of United States, into Mexico var. *leucogaster*.

Colors intermediate between the two last. Bill longer, from nostril, .50, from gape, .81. *Hab.* Pacific Province var. *spilurus*.

SUBGENUS **THRYOTHORUS**, VIEILL.**Thryothorus ludovicianus**, var. **ludovicianus**, BONAP.**GREAT CAROLINA WREN.**

Sylwia ludoviciana, LATH. Ind. Orn. II, 1790, 548. *Troglodytes ludovicianus*, LICHT. Verz. 1822, 35; also of BONAPARTE, AUDUBON, and PRINCE MAX. *Thryothorus ludovicianus*, BON. List. 1838, etc. — BAIRD, Birds N. Am. 1858, 361; Rev. 123. *Troglodytes arundinaceus*, VIEILL. Ois. Am. Sept. II, 1807, 55, pl. cviii. (Certainly this species; the habits those of *C. palustris*.) *Certhia caroliniana*, WILSON, Am. Orn. II, 1810, 61, pl. xii, fig. 5. *Thryothorus littoralis*, VIEILL. Nouv. Dict. XXXIV. 1819, 56. *Thryothorus louisianæ*, LESSON, Rev. Zool. 1840, 262.

Additional figures: AUD. Orn. Biog. I, 1831, pl. lxxvii. — IB. Birds Am. II, 1841, pl. cxvii.

SP. CHAR. Exposed portion of the bill shorter than the head. Above reddish-brown, most vivid on the rump. A whitish streak over the eye, bordered above with dark brown. Throat whitish; rest of under parts pale yellow-rusty, darkest towards the under tail-coverts, which are conspicuously barred with black. Exposed surface of the wings and tail (including the upper coverts) barred throughout with brown, the outer edges of tail-feathers and quills showing series of alternating whitish and dusky spots. Legs flesh-colored. Length, 6 inches; wing, 2.60; tail, 2.45.

HAB. Eastern Province of United States, from New York southward to the Gulf.

HABITS. The Great Carolina or Mocking Wren is found in all the Southeastern and Southern States from Florida to Maryland, and from the Atlantic to Kansas and the Valley of the Rio Grande. It is not common about Washington, but is much more abundant in the Southern States. Occasionally it

has been found as far north as Philadelphia, and in one or two instances near New York, where Mr. Lawrence has twice seen it, and where on one occasion it appeared to be breeding. Dr. Woodhouse found it very abundant throughout Texas and the Indian Territory. It is also abundant, and resident, in Southern Illinois, as far north as latitude $38^{\circ} 20' 20''$.

The habits and movements of this species, as described by those who have had the best opportunities for observing it, correspond with those of the whole family of Wrens. Its flight is usually only in short distances, and is accompanied with short flappings of the wings, and violent jerkings of



Thryothorus bewickii

the body and the tail. The latter is usually kept erect. It moves with quick jerks, and with sharp, rapid notes uttered as if in anger. It is in sight one moment and out the next, passes in at one place and out at another

with the rapidity of thought. Mr. Audubon often saw it singing from the roof of an abandoned flat-boat, near New Orleans, and when its song was ended it would creep from one board to the next, enter an augur-hole at one place to reappear at another, catching numerous spiders and other insects all the while.

Occasionally its movements are like those of a Creeper, ascending to the upper branches of trees of a moderate height, or climbing a grapevine, searching diligently among the leaves and in the crevices of the bark for insects.

This species possesses a great variety and power of song. It is also said to have and to exhibit remarkable powers of imitation, with a great variety in its appropriated notes of other birds, giving, with modulations, the hoarse rattle of the Kingfisher, the lively notes of the Tufted Titmouse, the simple refrain of the Ground Robin, with those of the Grakles, the Meadow Lark, the Bluebird, and others. Like the common Wren, the Carolina generally builds its nest in the hollow of some tree or stump, or any other convenient cavity. At other times it constructs its own habitation without any other protection than the thick branches of a vine or shrub. In these situations they are long and deep, and have an artificial roofing, often separate from the nest itself. The materials employed in their construction are hay, grasses, leaves, feathers, horse-hair, and dry fibres of the long Spanish moss. They are softly and warmly lined with fur, hair, and feathers. The nest is not unfrequently five or six inches in depth, while the opening is not large enough to admit more than one bird at a time. They sometimes raise three broods in a season.

It breeds as far north as Philadelphia, Mr. Audubon having found its nest in a swamp in New Jersey, opposite that city.

Although seemingly studious of concealment, and shy and retiring in its habits, Nuttall frequently observed it in Tuscaloosa and other large towns in Alabama, appearing on the tops of barns and out-houses, singing with great energy.

Dr. Cooper, who enjoyed a favorable opportunity of watching these birds in Florida, in the spring and summer of 1859, found a nest of this Wren in the middle of March. It was built in a small box on a shelf in a mill, and was about four feet from the ground. It was arched over at the top, though this was not necessary to shelter it. This covering was formed of shavings, with a few small sticks and straws. Four eggs were laid. The birds were very tame, and were not alarmed by the loud noise of the mill, nor by a cat almost always present. Another nest found by Dr. Cooper was built in a small hole in the trunk of a tree, not more than six inches from the ground. This nest was not arched over. Its close proximity to a dwelling-house alone protected it from wild animals.

The eggs of this Wren are usually six or seven in number, and vary in size and shape. They are for the most part of a spheroidal-oval shape, though

some are more oblong than others. Their length varies from .75 to .70 of an inch, and their greatest breadth from .60 to .65. The ground-color is a reddish-white, profusely covered with blotches of purple, slate, reddish-brown, and red. These are generally and pretty equally diffused, and are not more abundant at the larger end than elsewhere.

Thryothorus ludovicianus, var. berlandieri, COUCH.

BERLANDIER'S WREN.

Thryothorus berlandieri, COUCH, BAIRD, Birds N. Am. 1858, 362, pl. lxxxiii, fig. 1 (New Leon); Rev. 124.

SP. CHAR. Exposed portion of bill nearly as long as the head. Above dark rusty-brown, most vivid on the rump. A whitish streak over the eye, bordered above with brown. Chin white; rest of under parts dark brownish-red; the under tail-coverts and sides of the body barred with dusky. Exposed surface of wings and tail barred throughout with dusky. Legs flesh-color. Length, 5.25; wing, 2.25; tail, 2.12.

HAB. Valley of Rio Grande.

The distinctive features of this race will be found indicated on page 141. This form bears to the *T. ludovicianus* about the same relation that *Harporhynchus longirostris* does to *H. rufus*; and is hardly to be considered a distinct "species" from it. It should be noted that in both cases the lengthened bill and deeper color belong to the Rio Grande. It has not yet been met with north of the Rio Grande, but doubtless extends into Texas. Nothing is known of its habits.

SUBGENUS THRYOMANES, SCLAT.

Thryomanes, SCLATER, Catal. Am. Birds, 1861, 21. (Type *Troglodytes bewickii*.)



There are three strongly marked geographical varieties of "Bewick's Wren," separable by quite constant characters. Of these the Mexican (*leucogaster*) and the typical form from eastern North America (*bewickii*) differ most in coloration, while the western (*spilurus*) is intermediate in this respect, but with a longer bill than in the other two. The peculiarities of the three forms are expressed on page 141.

Thryothorus bewickii, var. **bewickii**, BONAP.**BEWICK'S WREN; LONG-TAILED HOUSE WREN.**

Troglodytes bewickii, AUD. Orn. Biog. I, 1831, 96, pl. xviii. — 1B. Birds Am. II, 1841, 120, pl. cxviii. *Thryothorus bewickii*, BONAP. List, 1838. — BAIRD, Birds N. Am. 1858, 363. *Telmotodytes bewickii*, CAB. Mus. Hein. I, 1850, 78. *Thryothorus bewickii*, var. *bewickii*, BAIRD, Rev. Am. B. 1864, 126.

SP. CHAR. Above dark rufous-brown; rump and middle tail-feathers sometimes a little paler, and very slightly tinged with gray, and together with the exposed surface of secondaries distinctly barred with dusky. Beneath soiled plumbeous-whitish; flanks brown. Crissum banded; ground-color of quills and tail-feathers brownish-black. Length, 5.50; wing, 2.25; tail, 2.50. Length from nostril, 39; along gape, 70.

HAB. Eastern Province of United States.

HABITS. This interesting species of Wren was first met with by Audubon in Louisiana. A number of individuals were observed at the time, but nothing of its history was known for several years afterward. In shape, color, and habits it most resembled the Carolina Wren, but was less rapid in movement, and not so lively. Fourteen years later Dr. Bachman again met with birds of this species, in 1835, at the Salt Sulphur Springs of Virginia. They comprised a family of two parents and five young, nearly full grown. Their notes were like those of the Winter Wren, neither louder nor more connected. They seemed of restless habit, creeping actively among fences, stumps, and logs. One ascended an oak, nearly to the top, in the manner of a Creeper. This species proved to be quite common in that locality, and to be the only Wren abundant among the mountains. Dr. Gibbs detected it near Columbia, S. C., and Dr. Trudeau afterwards found it quite common in Louisiana.

It was first observed breeding by Professor Baird in Carlisle, Penn., in 1844. In all respects the nests and their location corresponded with those of the common Wren. Dr. Woodhouse found it very abundant in the Indian Territory, and describes its habits as similar to those of other Wrens. Lieutenant Couch observed this Wren at Santa Rosalia in Mexico, early in March. It was seeking its food among the low prickly-pears. He was informed that they deposited their eggs wherever they could do so without making much of a nest, inside the cabins under the rafters, but in New Leon he found one of its nests quite elaborately constructed in a thatched roof. He describes the song as quite varied, and one of the sweetest that he heard in that country.

The late Dr. Gerhardt of Varnell's Station, Ga., met with this species among the mountainous portions of Northern Georgia, where it generally nested in holes in stumps. In one instance the nest was constructed five inches in length, and four in diameter, with a cavity two inches in depth, and the walls of great proportionate thickness, made externally of coarse roots,

finer on the inside, and lined with various kinds of animal fur and with feathers. Both birds worked together in constructing their nest, beginning on the 11th of April, and on the 27th of the same month this contained seven eggs. The nest was not covered at the top, in the manner of the Carolina Wren. In the following season another pair commenced building their nest in his bed, in a log-house. Driven from these impossible quarters, they tried the same experiment in various other parts of the house, but only to abandon it, and at last finished by making a successful attempt in the hay-loft. Their visits to that portion of Georgia, he informed me, were irregular and only occasional. In 1859 he had not met with any birds of this species for the space of five years.

The eggs measure .67 by .50 of an inch in their average proportions, resembling somewhat those of the Carolina Wren, but having a lighter ground, with fewer and finer markings of slate and reddish-brown. The ground-color is of a pinkish-white.

Mr. A. Boucard obtained specimens of these birds in the winter months, in the State of Oaxaca, Mexico, probably of the var. *leucogaster*.

We learn from Mr. Ridgway that in Southern Illinois (as far north as latitude $38^{\circ} 20' 20''$) this Wren is very abundant, and the most familiar species of the family. In certain localities (as in the Valley of the Wabash) it entirely replaces the *Troglodytes adon*, the latter being wholly unknown. In its habits it is even more familiar than that species, always preferring the out-buildings, even in large towns, to the neighborhood of the woods, and still further increases its attractions by possessing a charming song, a real *song*, of sweet notes finely modulated, and uttered, generally, as the bird perches upon a fence or the stable roof, its head thrown back, and its long tail pendent as it sings. The confused, gabbling sputter of *T. adon*, uttered as it pauses just for an instant in its restless hopping through the ivy, cannot be compared to the chant of liquid musical notes of this species, which resembles more nearly, both in modulation and power, that of the Song Sparrow (*Melospiza melodia*), though far superior to it. On ordinary occasions the note of Bewick's Wren is a soft, low *plut*, uttered as the bird hops about the fence or stable, its long tail carried upright, and jerked to one side at each hop. In its movements it is altogether more deliberate and less restless than the *T. ludovicianus*, or *Troglodytes adon*, neither of which it much resembles in motion, and still less in notes. The nest of this Wren is usually built about the out-houses, a mortise-hole or some well-concealed corner being generally selected. Old stables and ash-hoppers are especially frequented as nesting-places. Mr. Ridgway found one in the bottom of the conical portion of a quail-net which was hung up in a shed, and another in a piece of stove-pipe which lay horizontally in the garret of a smoke-house; another rested upon a flat board over the door of an out-house, while a fourth was placed behind the weather-boarding of a building. The nest is generally very bulky, though the bulk is regulated to suit

the size of the cavity in which the nest is placed. Its materials are usually sticks, straws, coarse feathers, fine chips, etc., exteriorly fastened together with masses of spider's-webs, the lining being of finer and more downy materials, generally soft spider's-webs, tow, and especially the downy feathers of barnyard fowls.

***Thryothorus bewickii*, var. *leucogaster*, GOULD.**

Troglodytes leucogastra, GOULD, P. Z. S. 1836, 89 (Tamaulipas). — BON. Notes Delattre, 1854, 43. / *Thryothorus bewickii*, SCLATER, P. Z. S. 1859, 372 (Oaxaca). *Thryothorus bewickii*, var. *leucogaster*, BAIRD, Rev. Am. B. 127.

SP. CHAR. Above ashy-brown; rump and middle tail-feathers brownish-ash, the former nearly pure ash; without appreciable bars; bars on secondaries obsolete. Beneath, including inside of wing, pure white, with little or no brownish on the sides. Crissum banded; ground-color of the quills and tail-feathers grayish-brown. Size of var. *bewickii*.

HAB. Southern borders of United States, into Mexico.

HABITS. Nothing is on record of the habits of this variety as distinguished from var. *bewickii*.

***Thryothorus bewickii*, var. *spilurus*, VIGORS.**

Troglodytes spilurus, VIGORS, Zool. Beechey's Voyage, 1839, 18, pl. iv, fig. 1 (California). *Thryothorus spilurus*, COOPER, Orn. Cal. I, 1870, 69. *Troglodytes bewickii*, NEWBERRY, P. R. R. Rept. VI, IV, 1857, 80. — COOPER & SUCKLEY, ib. XII, II, 1860, 190. *Thryothorus bewickii*, SCLATER, Catal. 1861, 22, no. 141 (in part). *Thryothorus bewickii*, var. *spilurus*, BAIRD, Rev. 126.

SP. CHAR. Similar to *bewickii* in color, the bill considerably longer. Length from nostril, .50, gape, .81, instead of .39 and .70.

HAB. Pacific slope of United States.

Young birds from all the localities differ from adults merely in having the feathers of the throat and breast very narrowly and inconspicuously edged with blackish.

HABITS. This variety of Bewick's Wren is exclusively an inhabitant of the Western coast. According to Dr. Cooper, they abound throughout the wooded parts of California and northward, frequenting the densest forests as well as the open groves. During the winter they were found in the vicinity of Fort Mojave, but left in April, probably for the mountains. They also winter throughout the mild regions towards the coast as far north as Puget Sound. They are known as Mocking-Wrens, though Dr. Cooper thinks they do not really imitate other birds, but rather have a great variety of their own notes, some of which resemble those of other birds and are well calculated to deceive one unaccustomed to them. He was often led to search in vain for some new form, which he thought he heard singing, only to find it to be

a bird of this species. Near San Diego, in April, 1862; he discovered one of its nests built in a low bush, only three feet from the ground. It was quite open above, formed of twigs, grass, etc., and contained five eggs just ready to hatch, described as white with brown specks near the larger end.

Messrs. Nuttall and Townsend observed these birds in the marshy meadows of the Wahlamet, accompanied by their young, as early as May. They seemed to have all the habits of Marsh Wrens. Drs. Gambel and Heermann, who observed them in California, describe them as keeping in low bushes and piles of brush, as well as about old dead trees and logs, over and around which they were flitting with the greatest activity, uttering, when approached, the usual grating scold of the Wrens.

In Washington Territory Dr. Cooper states that this and the Winter Wren are among the few birds that enliven the long rainy season with their songs, which were as constantly heard in the dullest weather as in the sunny spring. The young broods make their first appearance there in June. Dr. Suckley found this species very abundant at Puget Sound, where it is a constant resident throughout the year. On sunny days in January and in February it was found among low thickets in company with the smaller species. At this season they were very tame, allowing a person to approach them without apparent fear. He speaks of the voice of the male as being harsh and loud during the breeding-season, and not unlike that of the common House Wren.

GENUS **TROGLODYTES**, VIEILL.

Troglodytes, VIEILLOT, Ois. Am. Sept. 11, 1897, 52. (Type, *Troglodytes ardoni*.)

The characters of this genus are sufficiently indicated in the synopsis on page 131. They come very close to those of *Thryothorus*, the nostrils, especially, being linear and overhung by a scale. In this respect both differ from *Thryophilus* of Middle America. The bill is shorter or not longer than the head; straight, slender, and without notch. The tail is graduated, and shorter than the much rounded wings, the feathers narrow. The light superciliary line of *Thryothorus* is almost entirely wanting.

Species and Varieties.

a. Troglodytes

Tail and wings about equal.

T. ardoni. Beneath grayish-white. Crissum and flanks distinctly barred. Wing-coverts spotted with whitish. Dark bars of tail about half the width of their interspaces.

First primary nearly half the longest. Color above dark-brown, rufous towards tail. *Hab.* Eastern Province United States var. *ardoni*.

Wing similar. Above paler brown. *Hab.* Eastern Mexico, from Rio Grande southward var. *aztecus*.

First primary half the second. Above paler brown. *Hab.* Middle and Western Province United States var. *parkmanni*.

b. Anorthura.

Tail very short; only about two thirds the wing.

T. hyemalis.

a. Size of *ædon* except for shorter tail, wing about 2.00; culmen very straight. *Hab.* Aleutian Islands var. *alascensis*.

b. Much smaller than *ædon*, wing about 1.75.

Pale reddish-brown; dusky bars of upper parts with whitish spots or interspaces. *Hab.* Eastern Province United States; Cordova? var. *hyemalis*.

Dark rufous above and below; upper parts with few or almost no whitish spots. *Hab.* Pacific Province North America. var. *pacificus*.

Troglodytes ædon, VIEILL.**HOUSE WREN; WOOD WREN.**

Troglodytes ædon, VIEILL. Ois. Am. Sept. 11, 1807, 52, pl. cvii. — Ib. Nouv. Dict. XXXIV, 1819, 506. — BAIRD, Birds N. Am. 1858, 366; Rev. 138. — SELATER, Catal. 1861, 22, no. 145. — MAYNARD, B. E. Mass. *Hylemathrous ædon*, Cab. Jour. 1860, 407. *Sylvia domestica*, WILSON, Am. Orn. 1, 1808, 129, pl. vii. *Troglodytes fulvus*, NUTT. Man. 1, 1832, 422. ? *Troglodytes americanus*, AUD. Orn. Biog. II, 1834, 452; V, 1839, 469, pl. clxxix. — Ib. Birds Am. II, 1841, 123, pl. cxix. — BAIRD, Birds N. Am. 1858, 368; Rev. I, 141.

Other figures: AUD. Orn. Biog. I, 1831, pl. lxxxiii. — Ib. Birds Am. II, 1841, pl. cxx.

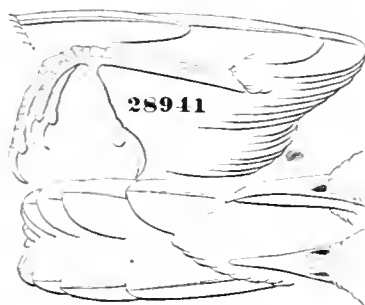
SP. CHAR. Tail and wings about equal. Bill shorter than the head. Above reddish-brown, darker towards the head, brighter on the rump. The feathers everywhere, except on the head and neck, barred with dusky; obscurely so on the back, and still less on the rump. All the tail-feathers barred from the base; the contrast more vivid on the exterior one. Beneath pale fulvous-white, tinged with light brownish across the breast; the posterior parts rather dark brown, obscurely banded. Under tail-coverts whitish, with dusky bars. An indistinct line over the eye, eyelids, and loreal region, whitish. Cheeks brown, streaked with whitish. Length, 4.90; wing, 2.08; tail, 2.00.

HAB. Eastern Province of the United States, from Atlantic to the Missouri River.

In the Review of American Birds (p. 139), I have established a variety, *aztecus*, to embrace specimens from Mexico paler than *ædon*, and with a brownish tinge on the breast, and smaller size.

There can scarcely be any doubt that the *T. americanus* of Audubon is nothing more than this species in dark, accidentally soiled plumage (from charcoal of burnt trees, etc.).

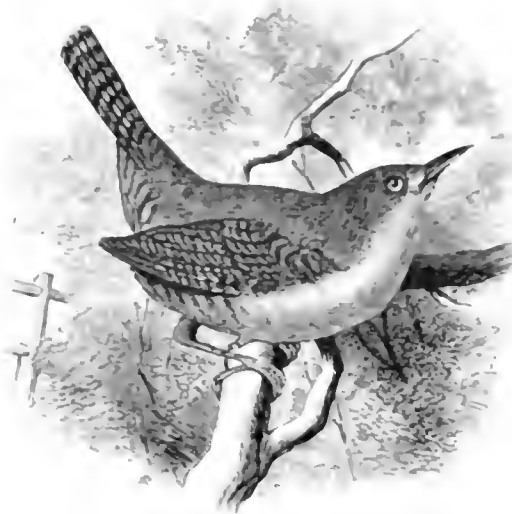
HABITS. The common House Wren is found throughout the United States, from the Atlantic to the Rocky Mountains, though it is not everywhere equally abundant. Thus, while in some parts of Massachusetts it occurs in considerable numbers every year, in other portions not twenty miles distant it is never seen. West of the Rocky Mountains it is replaced by Parkman's Wren, which is rather a race than a dis-



Troglodytes ædon

inct species, the differences in plumage being very slight, and in habits, nest, and eggs not appreciable, though Dr. Cooper thinks there is a difference in their song. Another race or a closely allied species, *T. aztecus*, is found in Mexico, near the borders of the United States, but does not have an extended range. It is found in the winter in Guatemala.

This species does not appear to be found beyond the southwestern portion of Maine and the southern portions of New Hampshire and Vermont. It makes its first appearance in Washington early in April, and for a while is



Troglodytes aedon

very abundant, visiting very familiarly the public grounds of the capitol, private gardens, out-buildings, and the caves of dwellings. It does not appear in the New England States until after the first week in May, and leaves for the South about the last of September. It is not observed in any portion of the United States after the first of November.

The hollows of decaying trees, crevices in rocks, or the centre of meshes of interlacing vines, are their natural resorts. These they readily relinquish for the facilities offered in the society of man. They are bold, sociable, confiding birds, and will enter into the closest relations with those who cultivate their acquaintance, building their nests from preference under the eaves of houses, in corners of the wood-shed, a clothes-line box, olive-jars, martin-boxes, open gourds, an old hat, the skull of an ox placed on a pole, the pocket of a carriage, or even the sleeve of an old coat left hanging in an out-building. In the spring of 1855 a pair of these Wrens nested within the house and over the door of the room of the late Robert Kennicott, where they raised their broods in safety. They built a second nest on a shelf in the same room, which they entered through a knot-hole in the unceiled wall. At first shy, they soon became quite tame, and did not regard the presence of members of the family. The male bird was more shy than his mate, and though equally industrious in collecting insects would rarely bring them nearer than the knot-hole, where the female would receive them. The female with her brood was destroyed by a cat, but this did not deter the male bird from appearing the following season with another mate and building their nest in the same place. Another instance of a singular selection of a breeding-place has been given by the same authority. Dr. Kennicott, the father of Robert, a country physician, drove an old two-wheeled open gig, in the back of which was a box, a foot in length by three inches in width, open at the top. In this a pair of Wrens insisted, time after time,

in building their nest. Though removed each time the vehicle was used, the pair for a long while persisted in their attempts to make use of this place, at last even depositing their eggs on the bare bottom of the box. It was two or three weeks before they finally desisted from their vain attempts.

Sometimes this bird will build a nest in a large cavity, holding perhaps a bushel. Before the cup of the nest is completed, the birds will generally endeavor to fill the entire space with sticks and various other convenient substances. Where the entrance is unnecessarily large they will generally contract it by building about it a barricade of sticks, leaving only a small entrance. In the midst of these masses of material they construct a compact, cup-shaped, inner nest, hemispherical in shape, composed of finer materials and warmly lined with the fur of small quadrupeds, and with soft feathers. If the eggs are taken as the female is depositing them, she will continue to lay quite a long while. In one instance eighteen were taken, after which the birds were let alone and raised a brood of seven.

During the months of May and June the male is a constant and remarkable singer. His song is loud, clear, and shrill, given with great animation and rapidity, the performer evincing great jealousy of any interruption, often leaving off abruptly in the midst of his song to literally "pitch in" upon any rival who may presume to compete with him.

If a cat or any unwelcome visitor approach the nest, angry vociferations succeed to his sprightly song, and he will swoop in rapid flights across the head or back of the intruder, even at the apparent risk of his life.

Where several pairs occupy the same garden, their contests are frequent, noisy, and generally quite amusing. In their fights with other birds for the possession of a coveted hollow, their skill at barricading frequently enables the Wrens to keep triumphant possession against birds much more powerful than themselves.

Their food is exclusively insectivorous, and of a class of destructive insects that render them great benefactors to the farmer. Mr. Kennicott ascertained that a single pair of Wrens carried to their young about a thousand insects in a single day.

The young, when they leave their nest, keep together for some time, moving about, an interesting, sociable, and active group, under the charge of their mother, but industrious in supplying their own wants.

The eggs of the Wren, usually from seven to nine in number, are of a rounded-oval shape, at times nearly as broad as long. Their ground-color is white, but they are so thickly studded with markings and fine spots of reddish-brown, with a few occasional points of purplish-slate, as to conceal their ground. Their shape varies from nearly spherical to an oblong-oval, some measuring .60 by .55 of an inch, others with the same breadth having a length of .67 of an inch.

Under the name of *Troglodytes americanus*, or Wood Wren, Mr. Audubon figured and described as a distinct species what is probably only a somewhat

larger and darker form of the present species, hardly distinct enough to be treated even as a race. Mr. Audubon met with an individual near Eastport in 1832. The young were following their parents through the tangled recesses of a dark forest, in search of food. Others were obtained in the same part of Maine, near Dennisville, where Mr. Lincoln informed Mr. Audubon that this bird was the common Wren of the neighborhood, and that they bred in hollow logs in the woods, but seldom approached farm-houses.

In the winter following, at Charleston, S. C., Mr. Audubon again met individuals of this supposed species, showing the same habits as in Maine, remaining in thick hedges, along ditches in the woods, not far from plantations. The notes are described as differing considerably from those of the House Wren. It has not been seen by Mr. Boardman, though residing in the region where it is said to be the common Wren. Professor Verrill mentions it as a rare bird in Western Maine.

Mr. Charles S. Paine, of Randolph, Vt., is the only naturalist who has met with what he supposes were its nest and eggs. The following is his account, communicated by letter.

"The Wood Wren comes among us in the spring about the 10th or 15th of April, and sings habitually as it skips among the brush and logs and under the roots and stumps of trees. In one instance I have known it to make its appearance in midwinter, and to be about the house and barn some time. It is only occasionally that they spend the summer here (Central Vermont). The nest from which I obtained the egg you now have, I found about the first of July, just as the young were about to fly. There were five young birds and one egg. The nest was built on the hanging bark of a decaying beech-log, close under the log. A great quantity of moss and rotten wood had been collected and filled in around the nest, and a little round hole left for the entrance. The nest was lined with a soft, downy substance. I have no doubt that they sometimes commence to breed as early as the middle of May, as I have seen their young out in early June."

Mr. Paine discredits the statement that they build their nests in holes in the ground. The egg referred to by Mr. Paine is oval in shape, slightly more pointed at one end, measuring .75 of an inch in length by .53 in breadth. The ground is a dead chalky-white, over which are sprinkled a few very fine dots of a light yellowish-brown, slightly more numerous at the larger end. This egg, while it bears some resemblance to that of the Winter Wren, is totally unlike that of the House Wren.

Troglodytes ædon, var. parkmanni, AUD.**PARKMAN'S WREN; WESTERN WOOD WREN.**

Troglodytes parkmanni, AUD. Orn. Biog. V, 1839, 310. — IB. Synopsis, 1839, 76. — IB. Birds Am. II, 1841, 133, pl. exxii. — BAIRD, Birds N. Am. 1858, 367; Rev. 140. — COOPER & SUCKLEY, P. R. R. Rep. XII, ii, 1860, 191 (nest). — SCLATER, Catal. 1861, 23, no. 146. — COOPER, Orn. Cal. I, 1870, 71. *Troglodytes sylvestris*, GAMBEL, Pr. A. N. Sc. III, 1846, 113 (California, quotes erroneously AUD. *T. americanus*).

HAB. Western and Middle Provinces of United States. East to the Missouri River. Western Arizona, COUES.

Although the differences between the eastern and western House Wrens, as stated in the Birds of North America, are not very appreciable, yet a comparison of an extensive series shows that they can hardly be considered as identical. The general color of *parkmanni* above is paler and grayer, and there is little or none of the rufous of the lower back and rump. The bars on the upper surface are rather more distinct. The under parts are more alike, as, while *ædon* sometimes has flanks and crissum strongly tinged with rufous, other specimens are as pale as in *T. parkmanni*.

Perhaps the most appreciable differences between the two are to be found in the size and proportions of wing and tail. The wing in *parkmanni* is quite decidedly longer than in *ædon*, measuring, in males, 2.12 to 2.15, instead of 2.00 to 2.05. This is due not so much to a larger size as to a greater development of the primaries. The first quill is equal to or barely more than half the second in *parkmanni*; and the difference between the longest primary and the tenth amounts to .32 of an inch, instead of about .20 in *ædon*, where the first quill is nearly half the length of the third, and much more than half the length of the second.

HABITS. This western form, hardly distinguishable from the common House Wren of the Eastern States, if recognized as a distinct species, is its complete analogue in regard to habits, nest, eggs, etc. It was first obtained by Townsend on the Columbia River, and described by Audubon in 1839. It has since been observed in various parts of the country, from the Mississippi Valley to the Pacific Coast, and from Cape St. Lucas to Oregon.

Dr. Cooper, in his Birds of Washington Territory, speaks of this Wren as common about Puget Sound, where it appeared to be much less familiar than our common Wren, though its habits and song seemed to be very similar. It there frequented chiefly the vicinity of woods and piles of logs, neither seeking nor dwelling in the vicinity of houses. It arrives there about the 20th of April. As observed about Vancouver in 1853, its song appeared to Dr. Cooper different from that of the *T. ædon*. He found one of their nests built in a horse's skull that had been stuck upon a fence. Dr. Suckley, who observed these birds about Fort Steilacoom, describes their voice as harsh and unmusical.

Dr. Cooper has since observed them in California, and in the winter, in the Colorado Valley, where they roosted at night under the eaves of the garrison buildings. They make their appearance at San Francisco as early as March 16, and nest at San Diego in April. He has found their nests in hollow trees at various heights, from five to forty feet, all composed of a floor and barricade of long dry twigs, grass, and bark, loosely placed, but so interwoven as to leave only just space for the birds to squeeze in over them. They are warmly lined with a large quantity of feathers. Their eggs he gives as from five to nine in number.

The late Mr. Hepburn has furnished more full and exact information in regard to this species. We give it in his own words.

"The *T. parkmanni* is the common wren of Vancouver Island, far more so than of California, where I have found the Bewick's Wren (*T. bewickii*) much more numerous. Parkman's Wren builds its nest in hollow trees in Vancouver Island, about the middle of May, forming it of small sticks laid at the bottom of the hole, neatly and comfortably lining it on the inside with feathers that arch over the eggs. It will also readily avail itself of any similar and equally convenient cavity. I have known these birds to build under the roof of a frame house, entering by a hole between the topmost board and the shingles; also in a hole in a gate-post, through which gate people were continually passing; and also over a doorway, getting in by a loose board, in a place where the nest could be reached by the hand. In 1852 I put a cigar-box, with a hole cut in one end, between the forks of a tree in a garden at Victoria. A pair of Wrens speedily took possession of it and formed their nest therein, laying seven eggs, the first on the 18th of May. The eggs of this Wren are white, thickly freckled with pink spots, so much so in some specimens as to give a general pink appearance to the egg itself, but forming a zone of a darker hue near the larger end. They are .81 of an inch in length by .50 in width."

Their eggs resemble those of the *T. adon* so as to be hardly distinguishable, yet on comparing several sets of each there seem to be these constant differences. The spots of the western species are finer, less marked, more numerous, and of a pinker shade of reddish-brown. The eggs, too, range a little smaller in size, though exhibiting great variations. In one nest the average measurement of its seven eggs is .60 by .50, that of another set of the same number .70 by .50 of an inch.

In all respects, habits, manners, and notes, Parkman's Wren is a perfect counterpart of the eastern House Wren. In the country east of the Sierra Nevada it almost wholly replaces the western Bewick's Wren (*Thryothorus bewickii*, var. *spilurus*), and inhabits any wooded localities, as little preference being given to the cottonwoods of the river valleys as to the aspen groves high up in the mountains.

Troglodytes parvulus, var. hyemalis, VIEILL.**WINTER WREN.**

Sylvia troglodytes, WILSON, Am. Orn. 1, 1808, 139, pl. viii, f. 6. *Troglodytes hyemalis*, VIEILLOT, NOUV. DICTIONNAIRE, XXXIV, 1819, 514. — AUD. Orn. Biog. IV, 1838, 430, pl. cccx. — IB. Birds Am. II, 1841, 128, pl. cxxi. — BAIRD, Birds N. Am. 1858, 369; Rev. 144. — SCLATER, P. Z. S. 1856, 290 (Cordova, Mex.). — IB. Catal. 1861, 23, no. 152. — DALL & BANNISTER (Alaska). — COOPER, Orn. Cal. 1, 1870, 73.

SP. CHAR. Bill very straight, slender, and conical; shorter than the head. Tail considerably shorter than the wings, which reach to its middle. Upper parts reddish-brown; becoming brighter to the rump and tail; everywhere, except on the head and upper part of the back, with transverse bars of dusky and of lighter. Scapulars and wing-coverts with spots of white. Beneath pale reddish-brown, barred on the posterior half of the body with dusky and whitish, and spotted with white more anteriorly; outer web of primaries similarly spotted with pale brownish-white. An indistinct pale line over the eye. Length, about 4 inches; wing, 1.66; tail, 1.26.

HAB. North America generally. South to Cordova, Mex.

Western specimens may be separated as a variety *pacificus* (BAIRD, Rev. Am. Birds, 1864, 145), based on the much darker colors and the almost entire absence of the whitish spots among the dark bars. The under parts are more rufous; the tarsi are shorter, the claws larger, the bill straighter and more slender.

The Winter Wren is very closely related to the common Wren (*T. parvulus*, KOCH) of Europe, so much so, in fact, that the two almost seem to be varieties of one species. The differences, as shown in a large series from both continents, are the following: In *T. parvulus* there is a tendency to more uniform shades; and the prevailing tint anteriorly, beneath, is a pale yellowish-ash, almost immaculate, instead of brownish-ochraceous, showing minute specks and darker edges to the feathers. In extreme specimens of *T. parvulus* the bars even on the tail and wings (except primaries, where they are always distinct) are very obsolete, while on the lower parts they are confined to the flanks and crissum. Sometimes, however, specimens of the two are found which are almost undistinguishable from each other. In fact, it is only by taking the plainer European birds and comparing them with the darker American examples from the northwest coast, that the difference between *T. parvulus* and *T. hyemalis* is readily appreciable.

HABITS. The Winter Wren, nowhere very abundant, seems to be distributed over the whole of North America. Hardly distinguishable from the common Wren of Europe, it can scarcely be considered as distinct. The habits of our species certainly seem to be very different from those assigned to the European bird, which in England appears to be as common and as familiar a bird as even the Redbreast. The small size and retiring habits of our species, as well as its unfrequent occurrence, and only in wild places, combine to keep its history in doubt and obscurity. It is supposed

to be northern in its distribution during the breeding-season yet only a single specimen was obtained by Sir John Richardson, and that on the northern shores of Lake Huron.

On the Pacific coast Dr. Cooper regarded the Winter Wren as the most common species in the forests of Washington Territory, where it frequented even the densest portions, and where its lively song was almost the only sound to be heard. It was most commonly seen in winter, retiring in summer to the mountains to breed. He observed young birds on the Coast Mountains in July.

Dr. Suckley also states that this Wren was found at Fort Steilacoom more abundantly in the winter than any other species. It was very unsuspicious, allowing a very near approach. The dense fir forests, among fallen logs, were its usual places of resort during the long, damp, and dreary winters of Oregon. Dr. Suckley regarded the habits of this species and those of the Parkman Wren as nearly identical. Mr. Bischoff obtained four specimens in Sitka.

Mr. Audubon found this species at Eastport, on the 9th of May, in full song and quite abundant. A month later he found them equally plentiful in the Magdalen Islands, and afterwards, about the middle of July, in Labrador. He described its song as excelling that of any bird of its size with which he was acquainted, being full of cadence, energy, and melody, and as truly musical. Its power of continuance is said to be very surprising.

The characteristics of the Winter Wren are those of the whole family. They move with rapidity and precision from place to place, in short, sudden hops and flights, bending downward and keeping their tails erect. They will run under a large root, through a hollow stump or log, or between the interstices of rocks, more in the manner of a mouse than of a bird.

The writer has several times observed these Wrens on the steep sides of Mount Washington, in the month of June, moving about in active unrest, disappearing and reappearing among the broken masses of granite with which these slopes are strewn. This was even in the most thickly wooded portions. Though they evidently had nests in the neighborhood, they could not be discovered. They were unsuspicious, could be approached within a few feet, but uttered querulous complaints if one persisted in searching too long in the places they entered.

This Wren, as I am informed by Mr. Boardman, is a common summer resident near Calais, Me.

Mr. Audubon met with its nest in a thick forest in Pennsylvania. He followed a pair of these birds until they disappeared in the hollow of a protuberance, covered with moss and lichens, resembling the excrescences often seen on forest trees. The aperture was perfectly rounded and quite smooth. He put in his finger and felt the pecking of the bird's bill and heard its querulous cry. He was obliged to remove the parent bird in order to see the eggs, which were six in number. The parent birds made a great clamor as

he was examining them. The nest was seven inches in length and four and a half in breadth. Its walls were composed of mosses and lichens, and were nearly two inches in thickness. The cavity was very warmly lined with the fur of the American hare and a few soft feathers. Another nest found on the Mohawk, in New York, was similar, but smaller, and built against the side of a rock near its bottom.

Mr. William F. Hall met with the nest and eggs of this bird at Camp Sebois in the central eastern portion of Maine. It was built in an unoccupied log-hut, among the fir-leaves and mosses in a crevice between the logs. It was large and bulky, composed externally of mosses and lined with the fur of hedge-hogs, and the feathers of the spruce partridge and other birds. It was in the shape of a pouch, and the entrance was neatly framed with fine pine sticks. The eggs were six in number, and somewhat resembled those of the *Parus atricapillus*. The female was seen and fully identified.

In this nest, which measured five and three quarters inches by five in breadth, the size, solidity, and strength, in view of the diminutive proportions of its tiny architect, are quite remarkable. The walls were two inches in thickness and very strongly impacted and interwoven. The cavity was an inch and a quarter wide and four inches deep. Its hemlock framework had been made of green materials, and their strong and agreeable odor pervaded the structure. The eggs measured .65 by .48 of an inch, and were spotted with a bright reddish-brown and a few pale markings of purplish-slate, on a pure white ground. Compared with the eggs of the European Wren their eggs are larger, less oval in shape, and the spots much more marked in their character and distinctness.

Troglodytes parvulus, var. alascensis, BAIRD.

ALASKA WREN.

Troglodytes alascensis, BAIRD, Trans. Chicago Acad. Sc. 1, ii, 315, pl. xxx, fig. 3, 1869. — DALL & BANNISTER (Alaska). — FRIESCH, Ornith. N. W. Amerikas, 1872, 30.

SP. CHAR. ♂ ad., 61,329, Amaknak Island, Unalashka, Oct. 21, 1871; W. H. Dall. Above umber-brown, more rufescent on the wings, rump, and tail; secondaries and tail-feathers showing indistinct transverse dusky bars; primaries about equally barred with blackish and dilute umber or brownish-white; middle-coverts tipped with a small white dot, preceded by a black one. Lower part, including a rather distinct superciliary stripe, pale ochraceous-umber; sides, flanks, abdomen, and crissum distinctly barred with dusky and whitish on a rusty ground; crissum with sagittate spots of white. Wing, 2.20; tail, 1.60; culmen, .65; tarsus, .75.

HAB. Aleutian and Pribylow Islands, Alaska.

The specimen above described represents about the average of a large series obtained on Amaknak Island by Mr. Dall. They vary somewhat among themselves as regards dimensions, but all are very much larger than

any specimens of *T. hyemalis*, from which it also differs in longer, straighter, and more subulate bill (the gonys slightly ascending). The type specimen from St. George's Island was immature, and we embrace the opportunity of giving the description of an adult sent down with several others in the autumn of 1871 by Mr. Dall from Unalashka.

This form bears the same relation to *T. hyemalis* that *Melospiza unalashkensis* does to *M. melodia*; *T. pacificus*, like *M. rufina*, being an intermediate form.

HABITS. Of this new variety, the Alaska Wren, but little is as yet known as to its personal history. Mr. Dall states that it is found in abundance all the year round on St. George's Island, and that it breeds in May, building a nest of moss in the crevices of the rocks, and, according to the Aleuts, lays six eggs. Mr. Dall subsequently found it quite common at Unalashka in the summer of 1871.

GENUS **CISTOTHORUS**, CABANIS.

Cistothorus, CABANIS, Mus. Hein. 1850, 1851, 77. (Type, *Troglodytes stellaris*.)

Telmatodytes, CABANIS, Mus. Hein. 1850, 1851, 78. (Type, *Certhia palustris*.)

Thryothorus, VIEILLOT, Analyse, 1816, according to G. R. Gray.



Cistothorus palustris.

GEN. CHAR. Bill about as long as the head or much shorter, much compressed, not notched, gently decurved from the middle; the gonys slightly concave or straight. Toes reaching to the end of the tail. Tarsus longer than the middle toe. Hind toe longer than the lateral, shorter than the middle. Lateral toes about equal. Hind toe longer than or equal to its digit. Wings rather longer than the tail, all the feathers of which are much graduated; the lateral only two thirds the middle. The feathers narrow. Back black, conspicuously streaked with white.

Of this genus there are two sections, *Cistothorus* proper and *Telmatodytes*, the diagnoses of which have already been given. The two North American species present the feature, unique among our Wrens, of white streaks on the back.

- A. Cistothorus.** Bill half length of head. No white superciliary streak. Head and rump and back streaked with white. Tail dusky, barred with brown. *C. stellaris*.
B. Telmatodytes. Bill length of head. A white superciliary stripe. Back alone streaked with white. Tail-feathers black, barred with whitish. *C. palustris*.

Cistothorus stellaris, CABAN.**SHORT-BILLED MARSH-WREN.**

Troglodytes stellaris, "LICHT." NAUMANN, Vögel Deutschlands, III, 1823, 724 (Carolina).
Cistothorus stellaris, CAB. Mus. Hein. 77. — BAIRD, Birds N. Am. 1858, 365; Rev. 146. — SCLATER, Catal. 22, no. 142 (in part). *Troglodytes brevirostris*, NUTT. Man. I, 1832, 436. — AUD. Orn. Biog. II, 1834, 427, pl. clxxv. — LB. Birds Am. II, 1841, 138, pl. cxxiv. *C. elegans*, SCLATER & SALVIN, Ibis, 1859, 8.

SP. CHAR. Bill very short, scarcely half the length of the head. Wing and tail about equal. Hinder part of the crown and the scapular and interscapular region of the back and rump almost black, streaked with white. Tail dusky, the feathers barred throughout with brown (the color grayish on the under surface). Beneath white; the sides, upper part of breast, and under tail-coverts reddish-brown. Upper parts, with the exceptions mentioned, reddish-brown. Length, 4.50; wing, 1.75; tail, 1.75.

HAB. Eastern Province of United States, west to Loup Fork of Platte.

There is a closely allied variety from Mexico and Guatemala (*C. elegans*, SCLATER & SALVIN, Pr. Z. S., 1859, 8) which differs in the characters stated below.

White dorsal streaks extending to the rump, which is conspicuously banded with brown, and somewhat spotted with whitish. Beneath, including lining of wings, light cinnamon-brown; throat and belly paler, almost white; sides and crissum very obsoletely barred with darker, and faintly spotted with whitish. Feathers of jugulum like sides, but with the color obscured by the paler edges. Tarsus, .65 long. Hab. Eastern Province of United States *C. stellaris*.
 Streaks on back confined to interscapular region; rump and upper tail-coverts almost plain reddish-brown. Beneath much paler than in *stellaris*, without any appreciable indication of bars or spots on sides and crissum, or of the fulvous of the jugular feathers. Inside of wings snowy-white. Tarsus, .72 long.
 Hab. Mexico and Guatemala; Brazil? *C. elegans*.

The differences between these two varieties are just barely appreciable when specimens of the two, of corresponding seasons, are compared. Two Mexican examples (*elegans*) differ more from each other than one does from North American specimens; because one (a typical specimen received from Salvin) is in the worn, faded, midsummer plumage, and the other in the perfect autumnal dress. Besides the longer tarsi of these Mexican birds, their tails, and even their bills, are longer than seen in North American skins. But while these differences between the North American and Mexican birds are just appreciable, there is one from Brazil (51,017, Sr. Don Fred. Albuquerque) which is exactly intermediate between these two varieties in color, while in size it is even smaller than the North American ones, measuring as follows: wing, 1.60; tail, 1.60; culmen, .45, tarsus, .61.

Even if recognizable as belonging to different varieties, these specimens are certainly all referable to one species.

HABITS. The Short-billed Marsh Wren is very irregularly distributed throughout the United States, being found from Georgia to the British

Provinces, and from the Atlantic to the Upper Missouri. It is nowhere abundant, and in many large portions of intervening territory has never been found.

It is exclusively an inhabitant of low, fresh-water marshes, open swamps, and meadows, is never found on high ground, and is very shy and difficult of approach. It makes its first appearance in Massachusetts early in May, and leaves early in September. In winter it has been found in all the Gulf States, from Florida to Texas.



Cistothorus palustris.

According to Nuttall, this Wren has a lively and quaint song, delivered earnestly and as if in haste, and at short intervals, either from a tuft of sedge or from a low bush on the edge of a marsh.

When approached, the song becomes harsher and more hurried, and rises into an angry and petulant cry. In the early part of the season the male is quite lively and musical. These Wrens spend their time chiefly in the long, rank grass of the swamps and meadows searching for insects, their favorite food.

Their nest is constructed in the midst of a tussock of coarse high grass, the tops of which are ingeniously interwoven into a coarse and strong covering, spherical in shape and closed on every side, except one small aperture left for an entrance. The strong wiry grass of the tussock is also interwoven with finer materials, making the whole impervious to the weather. The inner nest is composed of grasses and finer sedges, and lined with soft, vegetable down. The eggs are nine in number, pure white, and rather small for the bird. They are exceedingly delicate and fragile, more so than is usual even in the eggs of Humming-Birds. They are of an oval shape, and measure .60 by .45 of an inch.

Mr. Nuttall conjectured that occasionally two females occupied the same nest, and states that he has known the male bird to busy itself in constructing several nests, not more than one of which would be used. As these birds rear a second brood, it is probable that these nests are built from an instinctive desire to have a new one in readiness for the second brood. This peculiarity has been noticed in other Wrens, where the female sometimes takes possession of the new abode, lays and sits upon her second set of eggs before her first brood are ready to fly, which are left to the charge of her mate.

Mr. Audubon found this Wren breeding in Texas. Dr. Trudeau met them on the marshes of the Delaware River, and their nest and eggs have been sent to us from the Koskonong marshes of Wisconsin. It has also been found

in the marshes of Connecticut River, near Hartford; and in Illinois Mr. Kennicott found it among the long grasses bordering on the prairie sloughs.

In Massachusetts I have occasionally met with their nests, but only late in July, when the rank grass of the low meadows has been cut. These were probably their second brood. The nest being built close to the ground, and made of the living grasses externally, they are not distinguishable from the unoccupied tussocks that surround them.

***Cistothorus palustris*, BAIRD.**

LONG-BILLED MARSH WREN.

Var. *palustris*.

Certhia palustris, WILSON, Am. Orn. II, 1810, 58, pl. xii, fig. 4 (Penna). *Troglodytes palustris*, BON. Obs. Wils. 1824, no. 66. — AUD. Orn. Biog. I, 1831, 500, pl. c. — IB. Birds Am. II, 1841, 135, pl. cxxiii. — REINHARDT, Ibis, 1861, 5 (Godthaab, Greenland). *Thryothorus palustris*, NUTT. Man. I, 1832, 439. *Cistothorus (Telmatodytes) palustris*, BAIRD, Birds N. Am. 1858, 364; Rev. 147. — SCLATER, Catal. 1861, 22. *Thryothorus arundinaceus*, VIEILLLOT, Nouv. Dict. XXXIV, 1819, 58 (not *Trog. arundinaceus*, VIEILLLOT). *Thryothorus arundinaceus*, BON. Consp. 1850, 220. *Telmatodytes arundinaceus*, CAB. Mus. Hein. 1850, 78.

HAB. Eastern United States, from the Missouri River; Greenland? REINHARDT: Mexico, and Guatemala? Cordova, SCLATER.

Var. *paludicola*.

Cistothorus palustris, var. *paludicola*, BAIRD, Rev. Am. B. 1864, 148. *Troglodytes palustris*, NEWB. P. R. Rep. VI, IV, 1857, 80 (Pacific region). *Cistothorus palustris*, COOPER & SUCKLEY, P. R. Rep. X, II, 1859, 190 (W. T.) — COOPER, Orn. Cal. I, 1870, 75. *Certhia palustris*, LORD, Pr. R. Art. Inst. IV, 117.

SP. CHAR. Bill about as long as head. Tail and wing nearly equal. Upper parts of a dull reddish-brown, except on the crown, interseapular region, outer surface of tertials, and tail-feathers, which are almost black; the first with a median patch like the ground-color; the second with short streaks of white, extending round on the sides of the neck; the third indented with brown; the fourth barred with whitish, decreasing in amount from the outer feather, which is marked from the base to the fifth, where it is confined to the tips; the two middle feathers above like the back, and barred throughout with dusky. Beneath rather pure white, the sides and under tail-coverts of a lighter shade of brown than the back; a white streak over the eye. Length, 5.50; wing, 2.08; tail, 2.00. (1,454.)

HAB. Pacific Coast and Middle Province of United States.

In comparing a series of Marsh Wrens of eastern North America with western, we find that they differ very appreciably in certain characteristics, which may be expressed by the following diagnoses: —

Bill lengthened, equal to tarsus. Tail-coverts above and below either perfectly plain, or with very obsolete bands, reduced to obscure spots beneath. Bands on tail broken: scarcely appreciable on the middle feathers. . . . var. *palustris*.
 Bill shorter than tarsus. Tail-coverts distinctly banded all across. Bands on tail quite distinct; appreciable on the central feathers. . . . var. *paludicola*.

The differences between these two races is much more appreciable than those between *Troglodytes aedon* and *T. "parkmanni"*; the most striking character is the much longer bill of the var. *palustris*.

Specimens of the var. *paludicola* from the interior are paler and more grayish-brown above, and have less distinct bars on the tail-coverts and tail, than in Pacific coast specimens, while on the crown the brown, instead of the black, largely predominates.

HABITS. The common Marsh Wren appears to have a nearly unrestricted range throughout North America. It occurs on the Atlantic coast from Massachusetts to Florida, and from the Atlantic to the Pacific, and as far north as Washington Territory on the west coast. A single specimen was procured in Greenland. It is not, however, at all common in these more northern latitudes. Mr. Drummond, of Sir John Richardson's party, met with it in the 55th parallel on the eastern declivity of the Rocky Mountains and in the Saskatchewan Valley. Dr. Cooper found it early in March in the salt marshes along the coast of Washington Territory, and thinks it winters in that section. On the Eastern coast it is not common as far north as Massachusetts, a few being found at Cambridge and in Barnstable County. It is abundant near Washington, D. C., and throughout the country in all suitable locations south and west from Pennsylvania. Mr. Ridgway found it plentiful in Utah.

They frequent low marshy grounds, whether near the sea or in the interior, and build in low bushes, a few feet from the ground, a well-constructed globular nest. On the Potomac, where the river is subject to irregular tides, they are generally not less than five feet from the ground.

These nests are nearly spherical, and both in size and shape resemble a cocoanut. They are made externally of coarse sedges firmly interwoven, the interstices being cemented with clay or mud, and are impervious to the weather. A small round orifice is left on one side for entrance, the upper side of which is also protected from the rain by a projecting edge. The inside is lined with fine grasses, feathers, the down of the silk-weed, and other soft and warm vegetable substances. These birds arrive in the Middle States early in May and leave early in September. They have two broods in the season, and each time construct and occupy a new nest.

Audubon describes its nest as built among sedges, and as usually partly constructed of the sedges among which the nest is built. This is the usual manner in which the *C. stellaris* builds its nest, but I have never known one of the present species building in this manner, and in the localities in which they breed, near the coast, being subject to irregular heights of tides, it could not be done with safety.

The note of the Marsh Wren is a low, harsh, grating cry, neither loud nor musical, and more resembling the noise of an insect than the vocal utterances of a bird.

Their food consists chiefly of small aquatic insects, minute mollusks, and the like, and these they are very expert in securing.

The eggs of this species average .65 of an inch in length and .50 in breadth. They are, in color, in striking contrast with those of the *C. stellaris*, being so thickly marked with blotches and spots of a deep chocolate-brown as to be almost of one uniform color in appearance. They are of an oval shape, at times almost spheroidal, one end being but slightly more pointed than the other. They number from six to nine.

In a few instances eggs of this species from the Mississippi Valley and from California are of a light ashy-gray color, the markings being smaller and of a much lighter color.

We have thus completed the account of the Oscine Singing-Birds with slender bills not hooked at the end, and which have ten distinct primaries; the first or outer one, however, either quite small or else considerably shorter than the second. We now come to a series with only nine primaries, the first being entirely wanting, and the second, now the outermost, nearly or quite as long as the third. In the preliminary tables of general arrangement will be found the comparative characters of the different families of *Oscines*, but the diagnosis of the series referred to is presented here, as follows: —

COMMON CHARACTERS. Primaries nine: the first quill nearly as long as the second or third. Tarsi distinctly scutellate the whole length anteriorly. Bill conical, but slender or depressed, usually, except in *Cærebidæ*, half the length of the head; more or less bristled, or notched. Nostrils oval or rounded. Lateral toes nearly or quite equal and shorter than the middle; the basal joint of the middle free nearly to its base externally, united for about half internally.

Motacillidæ. Bill slender. Culmen slightly concave at base. Legs long; claws but little curved. Hind toe considerably longer than the middle one; its claw much longer (twice) than the middle claw; all the claws but slightly curved. Innermost secondaries (so-called tertials) elongated, much longer than the outer secondaries; and the fifth primary emarginated at end. Nest on ground.

Sylvicolidæ. Bill rather slender, conical, or depressed. Culmen straight or convex. Hind toe shorter than the middle: the claws all much curved. Hind claw not conspicuously longer than the middle one. When the hind toe is lengthened, it is usually in the digit, not the claw. Tertials generally not longer than the secondaries, and not emarginated. Gape wide; tongue slightly split at end. Nest variously placed.

Cærebidæ. Similar to *Sylvicolidæ*. Bill generally longer: equal to head or more. Gape of mouth narrow; tongue generally much fringed at the end. Nest on trees.

The *Tanagridæ*, the *Fringillidæ*, and even the *Icteridæ*, come very near these families, as will be explained farther on, all agreeing in having the nine primaries, and in many other characters.

FAMILY MOTACILLIDÆ. — THE WAGTAILS.

CHAR. Bill slender, conical, nearly as high as wide at the base, with slight notch at the tip; the culmen slightly concave above the anterior extremity of the nostrils; short bristles at gape, which, however, do not extend forward to nostrils. Loral feathers soft and dense, but with bristly points; nasal groove filled with naked membrane, with the elongated nostrils in lower edge; the frontal feathers coming up to the aperture, but not directed forward nor overhanging it. Wings lengthened and sharp-pointed; the primaries nine (without spurious first), of which the first three to five, considerably longer than the succeeding, form the tip; the exterior secondaries generally much emarginated at the ends; the inner secondaries (so-called tertials) nearly equal to the longest primaries. The tail rather narrow, emarginate. Tarsi lengthened, scutellate anteriorly only, the hind claw usually very long, acute, and but slightly curved (except in *Motacilla*). Inner toe cleft almost to the very base, outer adherent for basal joint only.

The combination of naked nostrils, notched bill, and nine primaries, with the tarsi scutellate anteriorly only, will at once distinguish the *Anthina* of this family from the *Alaudidae*, which they so closely resemble in coloration, habits, and lengthened hind claw. The lengthened, slightly curved hind claw, much pointed wings, emarginated secondaries, — the inner ones nearly as long as the primaries, — distinguish the family from the *Sylviolidae*, with which also it has near relationships.

Subfamilies and Genera.

Motacillinae. Tail longer than or equal to wings; the two central feathers rather longer than lateral; the feathers broadest in middle, whence they taper gradually to the rounded tip. Colors uniform: gray, black, yellowish; without pale edges to feathers above, or streaks below.

Tail from coccyx considerably longer than the wings, doubly forked. Hind claw shorter than the toe; decidedly curved *Motacilla*.

Tail from coccyx equal to the wings, slightly graduated. Hind claw decidedly longer than the toe, slightly curved *Budytes*.

Anthinae. Tail shorter than the wings, emarginate at end, the two central shorter than lateral; the feathers broadest near the end, and rounding rapidly at end. Above grayish-brown, the feathers edged with paler. Under parts streaked.

Wings much pointed and lengthened.

Hind toe and claw shorter than tarsus; outstretched toes falling short of tip of tail *Anthus*.

Hind toe and claw longer than tarsus; outstretched toes extending beyond tip of tail *Neocorys*.

Wings short and rounded.

Point of wings formed by outer four primaries of nearly equal length *Naticocorys*.¹

Point of wing formed by outer five primaries, the first shorter than the third *Pediocorys*.²

¹ *N. rufa*, BAIRD. (*Alauda rufa*, GMELIN, Syst. Nat. I, 1788, 798.)

² *P. bogotensis*, BAIRD. (*Anthus bogotensis*, SCHLATER, P. Z. S. 1855, 109, pl. ci.)

SUBFAMILY MOTACILLINÆ.

GENUS MOTACILLA, LINN.

Motacilla, LINN. Syst. Nat. (Type, *Motacilla alba*.)

The diagnosis already given of *Motacilla* will serve to define it. The genus is an Old World one, represented by several species, only one of which (*M. alba*) is entitled to a place here from occurring in Greenland.

***Motacilla alba*, LINN.**

WHITE WAGTAIL.

Motacilla alba, LINN. Syst. Nat. 12th ed. 1766, 331. — KEYS. & BLAS. Wirb. Europ. 1840, xlix, and 174. — DEGLAND, Orn. Europ. I, 1849, 433. — REINHARDT, Ibis, 1861, 6 (Greenland). — NEWTON, Baring-Gould's Iceland, 1863, App. ("rather plentiful"). — BAIRD, Rev. Am. B. 1864, 152.

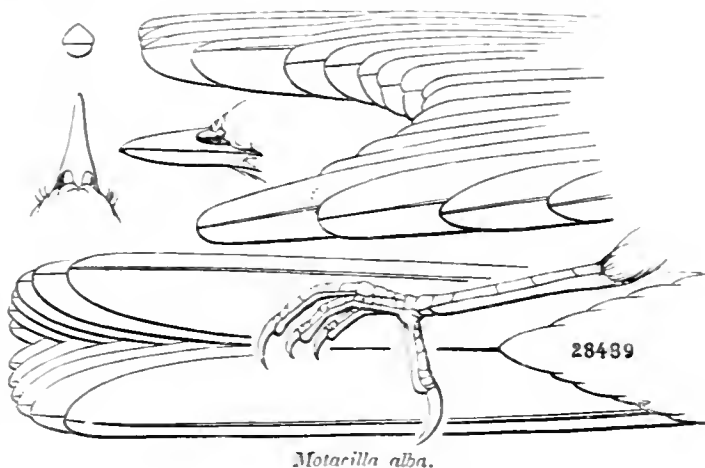
Figure: GOULD, Birds Europe, 143.

SP. CHAR. (9,410 ♂, Nürnberg). Forehead as far back as above the eyes, with sides of head and neck, white; the remaining portion of head and neck above and below to the jugulum, black; the rest of under parts white. Upper parts ashy-gray, including rump; the upper tail-coverts tinged with black. Wings with two conspicuous bands and the outer edges of the secondaries white. Tail-feathers black; the outer two white, edged with black internally. Bill and legs black. Tip of wing formed by outer three primaries; the distance between the third and fourth about one third that between the fourth and fifth. Tarsi lengthened; claw small; hind toe and claw shorter than the middle, its claw short, considerably curved, less than the toe alone; lateral toes nearly equal. Length, 7.30; wing, 3.45; tail, 3.90; bill from nostril, .37; tarsus, .86; hind toe and claw, .50.

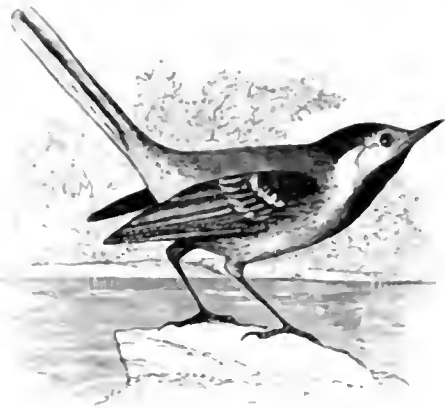
HAB. Continental Europe, rarer in England; Iceland; Greenland (only two specimens seen); Siberia; Syria; Nubia, etc.

Motacilla yarrelli, a closely allied species, by some considered a variety only, differs in having the rump black, the ashy of the back glossed with blackish, and with the black edging of the lateral tail-feathers broader.

HABITS. The common White Wagtail of Europe claims a place in the



North American fauna as an occasional visitant of Greenland, where in two instances single specimens have been procured. It is found in all portions



Motacilla alba.

of the European Continent, from the islands of the Mediterranean as far north as the Arctic regions. It appears in Sweden in April, and leaves there in October. Mr. Gould states also that it is found in the northern portions of Africa, and in the highlands of India. It also occurs, though less frequently, in England, where it is replaced by a local race, or an allied species, *Motacilla yarrelli* of Gould. The *Motacilla alba* is said by Temminck to inhabit meadows in the vicinity of streams

of water, villages, and old houses. Its food is chiefly insects in various stages and of different kinds. It builds its nest on the ground among the grass of the meadow, in fissures in rocks or decayed buildings, among the roots of trees, on the banks of streams, in piles of wood and fagots, or under the arch of a bridge. The nests are somewhat coarsely constructed of interwoven dry bent stems of plants and reeds, with a finer lining of the same. The eggs, six in number, are of a bluish-white ground thickly sprinkled with fine dottings, which are most usually of a blackish-brown color, sometimes ashy-gray or reddish-brown.

The Pied Wagtail, *M. yarrelli*, Degland and Gerbe regard as a race, and not a species. It has a limited habitat, confined to Norway, Sweden, and the British Islands, in the latter of which it is a resident throughout the year. Besides their difference in plumage, Mr. Yarrell has noticed certain differences also of habit. The *alba* is said not to be so partial to water as the pied species, and though often found near ploughed land, does not, like its kindred species, follow the plough in search of insects. Mr. Hewitson also states that it has a hoarser voice.

Like all the birds of this family, the Wagtail is much admired for the elegance of its form, its activity, and the airy lightness of its motions. It seems ever on the move, runs with great rapidity a quick succession of steps in pursuit of its food, and goes from place to place in short undulating flights. It has a cheerful chirping note which it utters while on the wing. When it alights, it gives a graceful fanning movement with its tail, from which it derives its name.

The Pied Wagtail, whose habits have been more closely observed by English naturalists, has frequently been seen to wade into the water in search of aquatic insects, and probably also of small fish, as in confinement they have been known to catch and feed on minnows in a fountain in the centre of their aviary. It is probable that the habits of the White Wagtail are not dissimilar.

They leave their breeding-places in October, collecting and moving in small flocks.

Their eggs measure .79 of an inch in length and .59 in breadth. The ground-color is of a grayish-white so thickly flecked with fine ash-colored and black dots as to give the entire egg the effect of a uniform dark ashen hue.

GENUS **BUDYTES**, CUVIER.

Budytes, CUVIER, R. A. 1817. (Type, *Motacilla flava*, LINN.)

The recent discovery of a species of yellow-bellied Wagtail in Norton Sound, by the naturalists of the Russian Telegraph Expedition, adds another member of an Old World family to the list of American birds. Much confusion exists as to the precise number of species in the genus, some grouping together as varieties what others consider as distinct species. There is an unusual degree of variation with age, sex, and season, and this, combined with strongly marked geographical peculiarities, renders the proper solution of the problem impossible to any but those having access to large series.



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Budytes flava.

Budytes flava, LINN.

YELLOW WAGTAIL.

Motacilla flava, LINN. Syst. Nat. I (1766), 33. — FINSCH & HARTLAUB, Vögel Ostafrikas, 268. *Budytes flava*, BON. (1838). — MIDDENDORFF, Sibirische Reise, II, ii (1852), 168. — DEGLAND & GERBE, Ornith. Europ. I (1867), 376. — BAIRD, Trans. Chicago Acad. Sci. I, ii, p. 312, pl. xxx, fig. 1 : 1869. — DALL & BANNISTER, Tr. Ch. Ac. I, 1869, 127. — TRISTRAM, Ibis, 1871, 231. — FINSCH, 1872.

SP. CHAR. Description of specimen No. 45,912, taken at St. Michael's, Norton Sound, June 6, 1866, by H. M. Bannister. Above, including edges of upper tail-coverts, rich olive-green, the top and sides of the head and neck pure ash-gray; chin and well-marked stripe from nostrils over the eye to the nape, white; all under parts rich yellow, tinged with olive on the sides. Stripe from corner of mouth through the eye, and involving the ear-coverts, blackish-ash. Feathers of wings and tail dark brown: the coverts and secondaries edged with olive (showing the obscure light wing-bars), the longest of the latter edged externally with white; innermost quills edged externally with white. Outer three quills nearly equal and longest (the prolonged secondaries as long), the others graduating less. Outer tail-feathers and shaft white; the inner web edged externally with dusky,

which, beginning at the base, runs out gradually to the edge, about half an inch from tip of feathers; second feather with rather less white, and with a narrow line of brown along



Budytes flava

the outer side of the shaft to within half an inch of the tip. Bill and legs blackish.

Dimensions (prepared specimen). Total length, 6.00; wing, 3.00; tail, 3.00; exposed portion of first primary, 2.30. Bill: length from forehead, 0.58; from nostril, 0.35; along gape, 0.57. Legs: tarsus, 0.91; middle toe and claw, 0.70; claw alone, 0.16; hind toe and claw, 0.65; claw alone, 0.36.

A second specimen (No. 45,910) differs in having ashy color of head obscured with olivaceous-brown; and the yellow on breast showing brownish bases. The

light markings on the wings more distinct and whiter.

Another bird (No. 45,913), taken on shipboard, about ninety miles west of St. Matthew's Island, Behring's Sea, August 10, 1866, appears to be of the same species, in autumnal dress. Here the upper colors are more brown; the lower parts yellowish-white tinged with brownish-fulvous across the breast and flank. Kamtschatkan specimens of the same stage of plumage are very similar.

I am unable to distinguish this species from the Protean *Budytes flava* of Europe and Asia. Many different races appear to be found throughout this wide circle of distribution, many of them more or less local, but the proportions and general character are the same in all, and the general tendency appears to be to unite all into one species. The sexes and ages of all the species, real or supposed, vary very much, and, in the absence of a large series, I can throw no light upon the obscurities of the subject. I cite above the latest general work on the birds of Europe, in which will be found the principal synonymes.

The specimens from Alaska submitted for examination to Mr. H. B. Tristram were identified by him as the *B. flava*.

HABITS. The Gray-headed Wagtail of Europe finds a place in the fauna of North America as a bird of Alaska, where specimens have been obtained, and where it is, at least, an occasional visitant. It is not a common bird of the British Islands, where it is replaced by a closely allied species. Only seven or eight instances of its occurrence were known to Mr. Yarrell.

On the continent of Europe it is quite an abundant species, inhabiting wet springy places in moist meadows, and frequenting the vicinity of water and the gravelly edges of rivers. It is numerous in all the central portions of Europe. It has also an extensive northern and eastern geographical range, appearing in Norway and Sweden as early as April and remaining there until September. Linnaeus met with it in Lapland on the 22d of May. It occurs in Algeria, Nubia, and Egypt. Mr. Gould has received it from the Himalayas, and Temminck gives it as a bird of Japan.

According to Degland, this bird is a very abundant species in France,

where it nests on the ground in the cornfields, in open fields, meadows, and amidst the standing grain. It lays from four to six eggs, of a brownish-yellow on a reddish-white ground, profusely covered with fine dots of reddish-gray, which are more or less confluent. A few zigzag lines of dark brown or black are found on the larger end. They measure .63 of an inch in length and .55 in breadth. Its food is flies, moths, small green caterpillars, and aquatic insects.

Ray's Wagtail, recognized by some authors as a distinct species, is probably only an insular race, chiefly found in the British Islands and in Western France. In the latter place both birds occur, and here also they have been known to mate the one with the other. Their nests and eggs are so alike as not to be distinguishable. The former are constructed of fine fibrous roots and fine stems of grasses, and are lined with hair.

These birds are remarkably social, collecting in small flocks soon after leaving their nests, and until their autumnal migrations following the older birds in quest of food. They have two call-notes which are quite shrill, and are repeated in succession, the second being lower in tone. No mention is made by the naturalists of the Telegraph Expedition of their having any song other than these notes.

Mr. Bannister first observed this species at St. Michael's, on the 9th or 10th of June, and from that time until late in August they were among the most abundant of the land-birds. During the month of June he observed them in flocks of twenty or thirty individuals. It seemed to be a rather shy bird. He described its flight as like that of our common Goldfinch, rising with a few strokes of its wings, then closing them and describing a sort of paraboloidal curve in the air. The only note which he heard and identified as uttered by this species was a kind of faint chirp, hardly to be called a song. These birds seemed to prefer the open country, and were rarely observed in the low brush, the only approach to woods found on the island.

SUBFAMILY **ANTHINÆ.**

The characters of this subfamily have already been detailed. The American sections may be defined as follows, although whether entitled to rank as genera may be questioned: —

COMMON CHARACTERS. Tail decidedly shorter than the wings; less than half the whole length of bird; simply emarginate and rounded. Hind claw lengthened; only slightly curved. Feathers of back with paler edges; breast streaked with dusky. Nest on the ground; eggs finely mottled so as almost to be uniform dark brown (in North American species).

a. Wings much pointed, and lengthened.

Point of wing formed by four outer primaries, of which the fourth sometimes a little shorter than the third. Hind toe and claw as long as middle, shorter than tarsus, the claw alone usually a little longer than the toe itself,

and slightly curved; inner toe and claw longer than the outer; outstretched toes falling short of the tip of tail; hind toe and claw shorter than tarsus *Anthus*.

Point of wings formed by four outer primaries, the first longest, or as long as others. Legs stout, the outstretched toes reaching almost to tip of tail. Hind toe and claw longer than tarsus, the claw very long, but equal to the toe proper *Neocorys*.

b. *Wings short, rounded.*

Point of wings formed by four outer primaries of nearly equal length *Notiocorys*.¹

Point of wings formed by five outer primaries, the first shorter than third *Pediocorys*.²

GENUS **ANTHUS**, BECHST.

Anthus, BECHST. Gemein. Naturg. Deutschl. 1802. (Type, *Alauda spinoletta*.)

CHAR. Bill slender, much attenuated, and distinctly notched. A few short bristles at the base. Culmen concave at the base. Tarsi quite distinctly scutellate; longer than the middle toe; inner lateral toe the longer. Hind toe rather shorter than the tarsus, but longer than the middle toe, owing to the long, attenuated, and moderately curved hind claw, which is considerably more than half the total length of the toe. Tail rather long, emarginate. Wing very long, considerably longer than the lengthened tail, reaching to its middle. The first primary nearly equal to the longest. The tertials almost as long as the primaries.



Anthus ludovicianus.

But one species of this genus belongs properly to North America, although a second is accidental in Greenland and Alaska. The diagnoses are as follows:—

Bill and feet blackish. Prevailing color above olive-brown. Beneath buff. Edge and inside of wings white. Shafts of middle tail-feathers above dark brown

A. ludovicianus.

Bill and feet dusky flesh-color. Prevailing color above olive-green; more distinctly streaked. Beneath greenish-white. Edge and inside of wings greenish-yellow. Shafts of middle tail-feathers above whitish *A. pratensis*.

ZANDER (Cabanis Journal, Extraheft I, 1853, 64) states that *Anthus cervinus*, PALLAS, is found in the Aleutian Islands. It is described as having

The feet yellowish-brown; the two longest under tail-coverts with a blackish longitudinal spot; the longest tertial almost equal to the longest primary; the shaft of the first tail-feather mostly white; no green on the plumage; the throat rust-color.

¹ *Anthus (Notiocorys) rufus*, BAIRD, Rev. Am. Birds, 1864, 156 (*Alauda rufa*, GM.). Hab. Isthmus of Panama.

² *Anthus (Pediocorys) bogotensis*, BAIRD, Rev. Am. Birds, 1864, 157 (*Anthus bogotensis*, SCLATER). Hab. Ecuador, Colombia.

BALDAMUS (Naumannia, 1857, 202) says he has received *Anthus aquaticus* and its eggs from Labrador. This statement, however, requires verification.

Anthus ludovicianus, LIGHT.

TITLARK; AMERICAN PIPIT.

Alauda ludoviciana, GM. S. N. I, 1788, 793. *Anthus ludovicianus*, LIGHT. Verz. 1823, 37; also of AUDUBON & BONAPARTE. — BAIRD, Birds N. Am. 1858, 232; Rev. 153. — COUES, Pr. A. N. S. 1861, 220 (Labrador). — SCLATER, P. Z. S. 1856, 296 (Cordova). — IB. Catal. 1861, 24, no. 153. SCL. & SALV. Ibis, 1859, 9 (Guatemala). — JONES, Nat. in Bermuda, 1859, 29, autumn. — BLAKISTON, Ibis, 1862, 4 (Saskatchewan). — DALL & BANNISTER, Tr. Chic. Ac. I, 1869, 277. — COOPER, Orn. Cal. I, 1870, 78. *Alauda rubra*, GM.; *Alauda rufa*, WILS.; *Anthus spinoletta*, BON., AUD.; *Alauda pennsylvanica*, BRISS.; ? *Alauda pennsylvanica*, BONN. Encycl. Méth. I, 1790, 319. ? *Motacilla hudsonica*, LATH. Ind. Orn. II, 1790, 503. — VIEILLOT, Encycl. Méth. II, 1823, 447. *Anthus pennsylvanica*, ZANDER; *Anthus aquaticus*, AUD.; *Anthus pipiens*, AUD.; *Anthus rubens*, MEKREM; *Anthus reinhardtii*, HÖLBOLL, Fauna Grönlands (ed. Paulsen), 1846, 25 (Greenland).

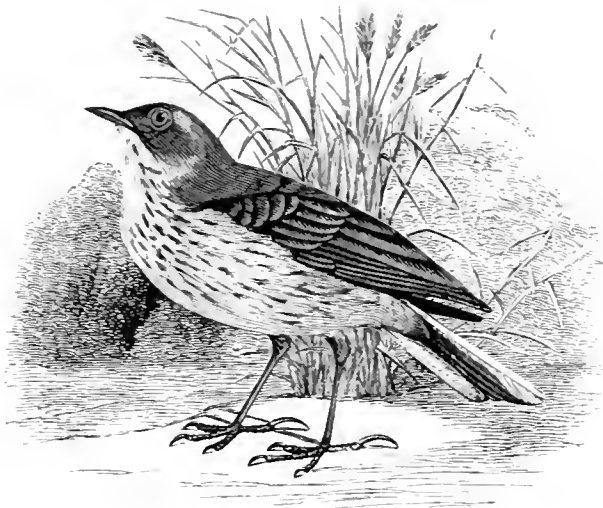
Figures: AUD. Birds Am. III, pl. exl. — IB. Orn. Biog. I, pl. lxxx. — WILSON, V. pl. lxxxix.

SP. CHAR. (Female, in spring.) Above olive-brown, each feather slightly darker towards the central portion; beneath pale dull-buff, or yellowish-brown, with a maxillary series of dark-brown spots and streaks across the breast and along sides. Ring round the eye, and superciliary stripe, yellowish. Central tail-feathers like the back, others dark blackish-brown; the external one white, except at the base within: a white spot at the end of the second. Primaries edged with whitish, other quills with pale brownish. Length, 6.50; wing, 3.45; tail, 2.95.

HAB. Whole of North America; Greenland; Bermuda; south to Orizaba, Guatemala, and even Peru? Heligoland, Europe. (GÄTKE.) Not noted in West Indies.

Spring specimens from Labrador, collected by Dr. Coues, have the upper parts ashy without any tinge of olive, almost bluish on the head; the lower parts deeper and more reddish-buff than in autumnal and winter specimens. Tarsi black in spring, brown in winter; toes always black.

HABITS. At different seasons of the year the Brown Titlark is found throughout the continent, and abundant for the time in the several parts of the country, chiefly frequenting the least cultivated portions and apparently preferring the sterile and least attractive regions. It is one of the most extensively distributed of all our North American birds, being found



Anthus ludovicianus.

in immense numbers over the whole length and breadth of North America. Gambel met them in large numbers in New Mexico and California; Richardson found them on the plains of the Saskatchewan; it is abundant in the Arctic regions from May to October, and is equally common on the coast of Labrador; Mr. Dall found it universal from British Columbia north. It is also found in Florida, Cape St. Lucas, Mexico, and Central America. Accidental specimens have occurred in Europe.

This lark is a bird of easy and beautiful flight, passing and repassing through the air with graceful evolutions, and when moving to new localities, sweeping over the place several times before alighting. It also moves rapidly on the ground and after the manner of the true larks, jerking the tail like our Water-Thrushes and the European Wagtails.

When feeding on the open ground in the interior, their food is chiefly insects and small seeds. On the banks of rivers and on the seashore they are fond of running along the edge of the water, searching among the drift for insects, small shells, and crustaceans. Near New Orleans and Charleston, in the winter, Mr. Audubon found them feeding, in company with the Turkey Buzzard, upon garbage.

Dr. Cones found the Titlark abundant in every locality visited by him in Labrador, giving him an ample opportunity to observe its habits during the breeding-season. He found them on some of the most rocky and barren islands along the coast. They frequented only the open, bare, and exposed situations, such as that coast everywhere afforded, and were never found in wooded localities. The nests of this species found by him were identical in situation, form, and construction, placed on the sides of steep, precipitous chasms, in small cavities in the earth, into which dry moss had been introduced to keep the nest from the damp ground. They were composed entirely of coarse, dry grasses loosely put together, without any lining. Their external diameter was six inches, and the depth of the cavity two inches.

Dr. Cones describes the song of the male bird as very sweet and pleasant. Mr. Audubon speaks of it as consisting of a few clear and mellow notes when on the wing, and when standing erect on the rocks it produces a clearer and louder song.

Dr. Cones speaks of their flight as undulating and unsteady, and never protracted to any great distance. They never alight on bushes, but always on the ground, where they run with great ease and rapidity. At low tides they resorted to the muddy flats, where they ran about upon the eel-grass, searching for their food in company with the small Sandpipers and in a similar manner, finding there an abundance of food. At all times they exhibited a heedless familiarity and an entire want of fear of man, feeding unconcernedly around the doors of the houses, and searching for their insect food on the roofs of the sheds and dwellings.

Both birds incubate and sit so closely that they may almost be trodden upon before they are willing to leave their nest, and even then only flutter

off to a short distance, with loud cries of distress that soon bring the mate and other pairs of the same species to join in the lamentations. They hover over the heads of the intruders, at times approaching within a few feet, expressing their distress by the most plaintive cries, and even when the intruders withdraw following them to a considerable distance.

All the nests of this lark that I have seen are remarkable for the thickness of their walls, and the strength, compactness, and elaborate care with which the materials are put together, particularly for nests built on the ground. They are well suited to protect their contents from the cold, damp ground on which they are placed; and their upper portions are composed of stout vegetable stems, lichens, and grasses strongly interwoven, and forming a strong rim around the upper part of the nest.

Dr. Cones describes their eggs as of a dark chocolate-color, indistinctly marked with numerous small lines and streaks of black. Audubon describes them as having a ground-color of a deep reddish-chestnut, darkened by numerous dots of deeper reddish-brown and lines of various sizes, especially toward the larger end. Those in my possession, received from Labrador by Thienemann, measure from .75 to .78 of an inch in length, and from .59 to .62 in breadth, and have a light-brown or clay-colored ground, so thickly covered with spots as to be almost concealed. These spots are of a purplish chocolate-brown, with occasional darker lines about the larger end. In others the markings are bolder and larger and of brighter hues. Like the eggs of the *Anthus arboreus* of Europe, it is probable that those of this Titlark exhibit great variations, both in ground-color and in the shades of their markings.

***Anthus pratensis*, BECHST.**

EUROPEAN PIPIT.

Alauda pratensis, LINN. Syst. Nat. 1766, 287. *Anthus pratensis*, BECHST. Deutsch. Vögel, III, 1807, 732. — KEYS. & BLAS. Wirb. Europas, 1840, 172. — ZANDER, Cab. Jour. I, extraheft, 1853, 60. — PAULSEN, ed. HÖLBOLL, Faun. Grönlands, 1846, 24. — REINHARDT, Ibis, 1861, 6. — NEWTON, BARRING-GOULD'S Iceland, 1863. — BAIRD, Rev. Am. B. 1864, 155.

Figures : GOULD'S Birds Europe, pl. cxxxvi.

HAB. Europe generally : common in Lapland : accidental in Greenland : St. Michael's, Norton Sound.

This species in general form resembles the *A. ludovicianus*, the fifth primary in both being abruptly and considerably shorter than the outer four; the bill and legs quite similar. The average size appears much the same. The upper parts are, however (especially the head and back), more distinctly streaked with dusky; the edge and inside of wing greenish-yellow, not white, and the upper plumage and outer edges of the quills decidedly olive-green. The shafts of the middle tail-feathers above are whitish, not dark

brown; the under parts greenish-white, conspicuously streaked with dark brown. The bill is dusky, the base and edges paler; the legs dusky flesh-color, not dark brown.

The occurrence of this species in Greenland was noticed in the Review; and since the publication of that work a specimen has been obtained at St. Michael's, in Alaska, by Mr. W. H. Dall, and is now in the Smithsonian collection. The specimen in question appears to be the true *pratensis*.

HABITS. This European species claims a place in the North American fauna on the ground of a single specimen having been found in Greenland, in 1845, and one at St. Michael's, Norton Sound. In the Old World it is the counterpart of our *Ludovicianus*, which, in all respects, it closely resembles. It is the most common and the best known of European Titlarks. In Great Britain, where it is found throughout the year, it appears to prefer the uncultivated districts, inhabiting commons and waste lands, and in the more northern parts frequenting the moors. It is also found in meadows and marsh lands, in winter seeking more sheltered places. It is rarely seen to alight on a branch or to sit on a rail. Its song is soft and musical, and is usually uttered when on the wing or when vibrating over its nest. It seeks its food altogether on the ground, running nimbly in pursuit of insects, slugs, and worms. According to Yarrell its nest is built on the ground, generally among the grass. It is composed externally of dried sedges, lined with finer materials and some hair. The eggs are six in number, of a reddish-brown color, mottled over with darker shades of the same, and measure .80 by .60 of an inch.

According to the observations of English naturalists, this bird resorts to various ingenious devices to conceal its nest, or to draw aside attention from it, such as feigning lameness when it is approached, and concealing it by artificial covering when it has been once discovered.

The Meadow Pipit is common during the summer months in Denmark, Sweden, and Norway, visiting also the Faroe Islands and Iceland. It inhabits the whole continent of Europe as far south as Spain, Italy, and Sicily. It has also been found in Northern Africa, and, according to Gould, in Western Asia. Temminck also states it to be among the birds of Japan.

According to Degland these larks, after the breeding-season, unite in small flocks, probably families, and frequent low and damp localities. In summer they are more often found on high and dry mountain plains. Their flesh is said to be delicious.

GENUS **NEOCORYS**, SLATER.

Neocorys, SLATER, Pl. Zool. Soc. Lond. 1857, 5. (Type, *Alauda spraguei*, AUD.)

CHAR. Bill half as long as the head; the culmen concave at the base, slightly decurved at the tip. Rictus without bristles. Legs stout; tarsi distinctly scutellate, longer than the middle toe. Hind toe very long, equal to the tarsus, much longer than the middle toe;

its claw but slightly curved, and about half the total length. Inner lateral toe rather longer than outer. Wings much longer than tail; first quill longest. Tertiaries considerably longer than secondaries. Tail rather short, emarginate.

But one species of this genus is known, it being peculiar to the Western plains.

Neocorys spraguei, SCLAT.

MISSOURI SKYLARK; SPRAGUE'S PIPIT

Alauda spraguei, AUD. Birds Am. VII, 1843, 335, pl. cccclxxxvi. *Agrodoma spraguei*. BAIRD, Stansbury's Rep. 1852, 329. *Neocorys spraguei*, SCLATER, P. Z. S. 1857, 5. — BAIRD, Birds N. Am. 1858, 234. — BLAKISTON, Ibis, 1862, 4 (Saskatchewan). — COOPER, Orn. Cal. I, 1870, 80. *Anthus (Neocorys) spraguei*, BAIRD, Rev. 155.

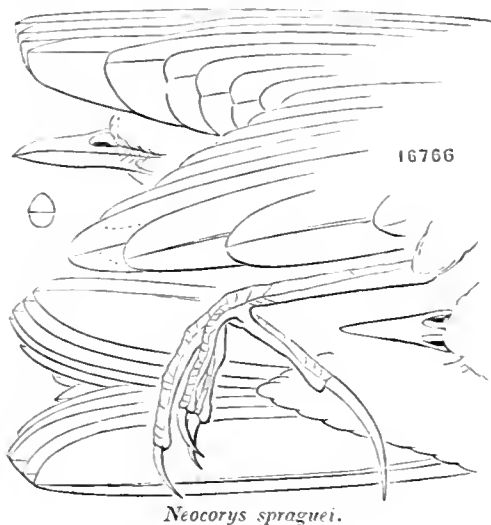
SP. CHAR. Above wood-brown, all the feathers edged with paler, especially on the neck, where there is a brownish-yellow tinge. The under parts are dull white, with a collar of sharply defined narrow brown streaks across the forepart and along the sides of the breast. Lores and a superciliary line whitish. Tail-feathers, except the middle ones, dark brown; the outer one white, the second white, with the inner margin brown. The outer primary is edged with white, and there are two dull whitish bands across the wings. Bill and feet yellow, the former brown above. Length (female), 5.75; wing, 3.35; tail, 2.50.

HAB. Plains of Yellowstone and Upper Missouri to Saskatchewan; Nebraska.

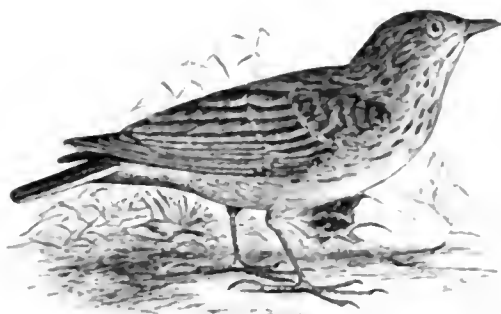
This little-known species has the general appearance of a Titlark, but is readily distinguished from *Anthus ludovicianus* by the purer white of its under parts, the much darker centres and much paler margins to the feathers above, the entirely white external tail-feather, and the yellow legs and bill, as well as by its generic peculiarities. In its song and general habits it approaches nearer the European Skylark than any bird belonging to our fauna.

HABITS. This interesting species was first described by Audubon, in the supplementary portion of his Birds of America. It was obtained by the party which accompanied him to the Upper Missouri in 1843. It was first met with on the 19th of June near Fort Union, in Dacotah Territory. It has since been found on the fork of the Saskatchewan, but little additional information respecting its habits has been obtained since its first discovery.

It seems to more nearly approach, in its habits, the European Skylark than any other of our North American birds. Mr. Edward Harris was completely misled, at first, by the sound of their song, so that on several occasions he sought for them on the ground. Their voices appeared to come to



him from the earth's surface. After having travelled in quest of them, to no purpose, to many distant parts of the prairies, he at last discovered that



Neocorys spraguei.

these sounds proceeded from several of these birds soaring at so great an elevation as to make them difficult to discover by the eye, even in the transparent atmosphere of that country.

They are described as running gracefully on the ground, at times squatting to observe the movements of the intruders, and again elevating their bodies as if to meet their approach.

Rising from the ground, they fly in an undulating manner, so that it is extremely difficult to shoot them on the wing. They continue thus to fly in increasing circles until about a hundred yards high, when they begin to sing. After a while, suddenly closing their wings, they drop to the ground. They could be easily approached in a light wagon, and in this manner several specimens were obtained.

Captain Blakiston (Ibis, V. 61) found this Skylark common on the prairies of the Saskatchewan during the breeding-season. He first met with it on the 6th of May, near Fort Carlton. When disturbed from the grass, its usual haunt, it utters a single chirp, and immediately mounts in the air by a circuitous course, with a very undulating flight, to a great height, where with outstretched wings it soars in a peculiar manner, and utters a very striking song. This is described as consisting of a quick succession of notes, in a descending scale, each note being lower than the preceding. The bird then descends to the ground with great rapidity, almost like a stone, and somewhat in the manner of a hawk swooping on its prey. It was difficult of approach, and not easily killed. He also observed these birds in Northern Minnesota, May 4, 1859.

A nest of this bird was built on the ground and placed in a hollow. It was made of fine grasses interwoven into a circular form, but without any lining. The eggs were four or five in number, an oblong oval in shape, much pointed at one end, and measuring .87 of an inch in length by .63 in breadth. Their ground-color was a dull white, so minutely dotted with a grayish-purple as to give the whole egg a homogeneous appearance, as of that uniform color.

The young larks, soon after being hatched, followed their parents on the ground, and were fed with seeds of the smaller plants and with insects. They had already begun to associate in small flocks of from eight to a dozen before the party left, and on the 16th of August had commenced their southern migrations.

FAMILY SYLVICOLIDÆ. — THE WARBLERS.

The *Sylvicolidæ* are essentially characterized among the Oscines with nine primaries, by their small size, the usually slender and conical insectivorous bill, shorter than the head, without angle in the gape near the base; the toes deeply cleft so as to leave the inner one free almost to its very base (except in *Mniotiltæ*), etc. The shallow notch at the end of the tongue, instead of a deeply fissured tip, distinguishes the family from the *Certhidæ*, to some of which there is otherwise so great a resemblance. The absence of abrupt hook and notch in both mandibles separates it from such of the *Vireonidæ* as have nine primaries.

The American *Motacillidæ* are distinguished from the *Sylvicolidæ* by the emargination of the outer and the great elongation of the inner secondaries, as well as by other features referred to under that family. *Anthus*, in particular, differs in the lengthened and slightly curved hind claw. There is little difficulty in distinguishing the *Sylvicolidæ*, however, from any families excepting the slender-billed forms of the *Tanagridæ*, as *Chlorospingus*, *Nemosia*, *Chlorochrysa*, etc., and the conirostral *Certhidæ*. In fact, some ornithologists are inclined to include all three of the families thus mentioned in one, from the difficulty of marking their boundaries respectively.

In fact, we are of the opinion that no violence would be done by adopting this view, and would even include with the above-mentioned families the *Fringillidæ* also. The order of their relation to one another would be thus: *Fringillidæ*, *Tanagridæ*, *Sylvicolidæ*, *Certhidæ*; there being scarcely any break in the transition between the two extremes, unless there are many genera referred to the wrong family, as seems very likely to be the case with many included in the *Tanagridæ*. The *fringilline* forms of the latter family are such genera as *Buarremon* and *Arremon*, they being so closely related to some *fringilline* genera by so many features — as rounded concave wing, lax plumage, and spizine coloration — as to be scarcely separable. Either these two families are connected so perfectly by intermediate forms as to be inseparable, or the term *Tanagridæ* covers too great a diversity of forms. With the same regularity that we proceed from the *Fringillidæ* to the typical forms of the *Tanagridæ* (*Pyrrhula*, *Tanagra*, *Culliste*, etc.), we pass down the scale from these to the *Sylvicolidæ*; while between many genera of the latter family, and others referred to the *Certhidæ*, no difference in external anatomy can be discovered, much less expressed in a description.

In the following synopsis we attempt to define the higher groups of the *Sylvicolidæ*, although in the large number of species and their close relationships it is very difficult to express clearly their distinctive features.

Subfamilies.

- A.** Bill conical, its bristles very weak, or wanting.
- a.* Bill sub-conical, the culmen and commissure nearly straight.
- Sylvicolinae.** Feet weak, not reaching near the end of the tail. Wing pointed, considerably longer than the nearly even or slightly emarginated tail. Feet dark-colored (except in *Helminthus*, *Helinaia*, and *Parula*). *Arboreal.*
- Geothlypinae.** Feet strong, reaching nearly to end of the tail. Wing rounded. Feet pinkish-white. *Terrestrial.*
- b.* Bill high and compressed, the culmen and commissure much curved.
- Icterianae.** Bill without notch or rictal bristles; wing much rounded, shorter than the tail.
- B.** Bill depressed, its bristles strong.
- Setophaginae.** Bill, *tyrannine*, considerably broader than high, the tip more or less hooked, and with a distinct notch. Rictal bristles reaching half-way, or more, to the tip.

Sections and Genera.

SYLVICOLINÆ.

1. Middle toe, with claw, longer than tarsus.
- Mniotiltæ.** Bill much compressed for terminal half, the lateral outline decidedly concave; culmen and gonys decidedly convex; commissure moderately concave. Rictal bristles very inconspicuous; notch just perceptible *Mniotilta.*
2. Middle toe, with claw, not longer than tarsus.
- Vermivoreæ.** Bill without a distinct notch, or lacking it entirely; rictal bristles wanting, or very minute; culmen and gonys nearly straight; bill only very moderately compressed.
- a.* Middle toe and claw about equal to tarsus.
- Bill not acute; culmen and gonys decidedly convex; notch just perceptible; bristles apparent *Protonotaria.*
- Bill moderately acute, robust; no notch; culmen straight, its base elevated and slightly arched; bristles not apparent *Helinaia.*
- Bill moderately acute; robust; no notch; culmen convex, its base not elevated; bristles apparent *Helminthus.*
- b.* Middle toe and claw considerably shorter than tarsus.
- Bill very acute, its outlines nearly straight; notch not perceptible; bristles not apparent *Helminthophaga.*
- Bill very acute, its outlines nearly straight; notch just perceptible; bristles strong *Parula.*
- Sylvicolæ.** Bill distinctly notched; rictal bristles strong; outlines generally slightly curved.
- Bill acute, gonys slightly concave *Perissoglossa.*
- Bill not acute, gonys convex *Dendroica.*

GEOTILYPINÆ.

3. Wings pointed, longer than the nearly even tail.
- Sciuræ.**
- Above olive-brown; beneath white with dark streaks *Sciurus.*
- Above olive-green; beneath yellow without streaks *Oporornis.*

4. Wings rounded, shorter than the graduated tail.

Geothlypeæ.

Above olive-green; beneath yellow, without streaks . . . *Geothlypis*.

ICTERIANÆ.

5. Bill very deep and compressed; tail graduated; outer toe deeply cleft.

Ictericeæ.

Olive-green above; bright yellow anteriorly beneath. Upper mandible deeper than the lower . . . *Icteria*.

Plumbeous-blue above; red, black, and white beneath. Upper mandible not so deep as the lower . . . *Granatellus*.

6. Bill slender, sub-conical, but curved; tail nearly even; outer toe adherent for basal half.

Teretristeæ.

Above olive-gray; beneath whitish posteriorly, and yellow anteriorly . . . *Teretristis*.

SETOPHAGINÆ.

7. Bill *tyrannine*. Tail broad, equal to or longer than the wing, and much rounded.

Setophageæ. Colors mainly black, red, and white.

Tail not longer than the wing. Above black, wing variegated *Setophaga*.

Tail longer than the wing. Above plumbeous, wing unvariegated *Myioborus*.

8. Bill *sylvicoline*. Tail narrow, almost even; shorter than the wing.

Myiodioctæ. Colors yellow beneath, olive-green or ashy above.

Black markings about the head in the ♂ . . . *Myiodioctes*.

9. Bill somewhat *parine*. Tail equal to the wing, almost even.

Cardellineæ. Colors mainly red, or red, ashy, and white.

Bill weak, almost cylindrical; wings rounded, the quills broad and soft at ends. Tail slightly rounded, the feathers soft. Colors mainly red. . . *Ergaticus*.

Bill stout, the culmen and gonyes very convex; wings pointed, the quills emarginated and hard at ends. Tail even, the feathers hard. Color ashy above; rump and beneath white. Head red and black. . . *Cardellina*.

Of the above, *Granatellus*, *Myioborus*, *Ergaticus*, and *Cardellina* belong to Central and South America, *Teretristis* to Cuba.

SUBFAMILY SYLVICOLINÆ.

SECTION MNIOTILTEÆ.

CHAR. Bill slightly notched some distance from the tip. Rictal bristles minute. Hind toe considerably developed, longer than the lateral toe; its claw decidedly longer than its digit. First quill nearly or quite as long as the second. Wings long, pointed; much longer than the tail, which is nearly even. Tail-feathers with white spots. Bill much compressed for terminal half, the commissure and lateral outlines decidedly concave; the culmen and gonyes convex.

GENUS **MNIOTILTA**, VIEILL.*Mniotilta*, VIEILL., Analyse, 1816, 45. (Type, *Motacilla varia*, L.)

GEN. CHAR. General form sylvicoline; bill rather long, compressed, shorter than the head, with very short rictal bristles and a shallow notch. Wings considerably longer than the tail, which is slightly rounded; first quill shorter than second and third. Tarsi rather short; toes long, middle one equal to the tarsus; hind toe nearly as long, the claw considerably shorter than its digit. Color white, streaked with black. Nest on ground; eggs white, blotched with red.

This genus differs from other Sylvicolines in the elongation of the toes, especially the hinder one, by means of which the species is enabled to move up and down the trunks of trees, like the true Creepers. But one species is recognized as North American, although Nuttall describes a second.

Mniotilta varia, VIEILL.**BLACK AND WHITE CREEPING WARBLER.**

Motacilla varia, LINN. S. N. I, 1766, 333. *Certhia varia*, VIEILL.; AUDUBON. *Mniotilta varia*, VIEILL., Gal. Ois. I, 1834, 276, pl. clxix. — AUDUBON. — BAIRD, Birds N. Am. 1858, 235; Rev. 167. — SCLATER, P. Z. S. 1858, 298 (Oaxaca, Xalapa); 1859, 363 (Xalapa); 1855, 143 (Bogota); 1856, 291 (Cordova); 1864, 172 (City of Mex.). — Ib. Catal. 1861, 25, no. 162. — SCL. & SALV. Ibis, 1859, 10 (Guatemala). — NEWTON, Ibis, 1859, 143 (Santa Cruz; winter). — CAL. JOUR. III, 475 (Cuba; winter). — BRYANT, Pr. Bost. Soc. 1859 (Bahamas; April 20). — GOSSE, Birds Jan. 131 (Jamaica; winter). — JONES, Nat. Bermuda, 1859, 29 (October). — CAL. JOUR. 1860, 328 (Costa Rica). — LAWRENCE, Ann. N. Y. Lyc. 1861, 322 (Panama R. R.; winter). — GRINDL. Cal. Journ. 1861, 326 (Cuba; very common). *Certhia maculata*, WILS. *Mniotilta borealis*, NUTT. *Mniotilta varia*, var. *longirostris*, BAIRD, Birds N. Am. 1858, xxxi, no. 167. — Ib. Catal. in 8vo, 1869, no. 167.

Figures: AUD. Orn. Biog. V, pl. xc; Birds Am. II, pl. cxiv. — WILSON, Am. Orn. III, pl. xix.

SP. CHAR. Bill with the upper mandible considerably decurved, the lower straight.

*Mniotilta varia*, Vieill.

General color of the male black, the feathers broadly edged with white; the head all round black, with a median stripe in the crown and neck above, a superciliary and a maxillary one of white. Middle of belly, two conspicuous bands on the wings, outer edges of tertials and inner of all the wing and tail feathers, and a spot on the inner webs of the outer two tail-feathers, white. Rump and upper tail-coverts black, edged externally with white. Female similar; the under parts white, obsoletely streaked with black on the sides and under tail-coverts. Length, 5 inches; wing, 2.85; tail, 2.25.

HAB. Eastern Province of North America, and north to Fort Simpson. Both coasts of Mexico (as far north as Mazatlan, on west side), and southward to Bogota. Whole of West Indies and Bermuda.

Localities quoted. Bahamas; Bermuda; Cuba; Jamaica; Santa Cruz; West Indies; Cordova, Xalapa, Oaxaca, Mex.; Guatemala; Panama R. R.; Bogota.

Specimens breeding in the Southern States differ in rather longer bill and less amount of black, but are otherwise undistinguishable.

HABITS. The Black and White Creeper, nowhere an abundant species, is met with in various sections of the country. It occurs in all parts of New England and New York, and has been found in the interior as far north as Fort Simpson. It has been met with on the Pacific coast only at Mazatlan, is common in the Bahamas and most of the West India Islands, generally as a migrant. It has also been found in Texas, in the Indian Territory, and in Mexico, and throughout Central America. In the last-named region Mr. Salvin states it to be pretty equally and generally spread over the whole country. It is there migratory, leaving in spring. It was also detected in Colombia, South America, by Mr. C. W. Wyatt. Mr. Newton also met with it as a winter visitant in St. Croix, leaving that island at the end of March. He regards this species as almost a thorough Creeper in habits. In Jamaica a few are resident throughout the year, according to the observations of Mr. March, and though its nests have never been found there, a son of Mr. March saw a pair carrying materials with which to construct one.



Mniotilta varia

Dr. Coues states that this Warbler is a very common summer resident near Washington, but is more abundant there in the spring and in the fall, the greater number going farther north to breed. They arrive in Washington during the first week in April, and are exceedingly numerous until May. He adds that they are generally found in high open woods, and that they "breed in holes in trees." This is probably an error, or, if ever known to occur, an entirely exceptional case.

Our bird is also a common summer visitant at Calais, arriving there about the 1st of May, and by the 10th becoming rather abundant. Mr. Boardman has frequently found their nests there, and always on the ground, in rocky places and usually under small trees.

It does not appear to have been met with on the Pacific coast north of Mazatlan, nor in any portion of Western North America, beyond the valleys of the Mississippi and the Rio Grande.

In its habits this bird seems to be more of a Creeper than a Warbler. It is an expert and nimble climber, and rarely, if ever, perches on the branch of a tree or shrub. In the manner of the smaller Woodpeckers, the Creepers, Nuthatches, and Titmice, it moves rapidly around the trunks and larger limbs of the trees of the forest in search of small insects and their larvæ.

It is graceful and rapid in movement, and is often so intent upon its hunt as to be unmindful of the near presence of man.

It is found chiefly in thickets, but this is probably owing to the fact that there its food is principally to be obtained. It is occasionally seen in more open country, and has been known to breed in the immediate vicinity of a dwelling.

Wilson regarded this bird as a true Creeper, and objected to its being classed as a Warbler. He even denied to it the possession of any song. In this he was quite mistaken. Though never loud, prolonged, or powerful, the song of this Warbler is very sweet and pleasing. It begins to sing from its first appearance in May, and continues to repeat its brief refrain at intervals almost until its departure in August and September. Nuttall speaks of it as being at first a monotonous ditty, and as uttered in a strong but shrill and filing tone. These notes, he adds, as the season advances, become more mellow and warbling, and, though feeble, are pleasing, and are similar to those of the Redstart. But this statement does not do full justice to the varied and agreeable notes with which, in early spring, these birds accompany their lively hunt for food among the tops of the forest trees. They are diversified and sweet, and seem suggestive of a genial and happy nature.

These birds make their appearance in New England early in May, and remain there, among the thick woods, until the middle of October, and in the Southern States until the verge of winter.

Their movements in search of food are like those of the Titmice, keeping the feet together and moving in a succession of short rapid hops up the trunks of trees and along the limbs, passing again to the bottom by longer flights than in the ascent. They make but short flights from tree to tree, but are apparently not incapable of more prolonged ones.

So far as I know, these birds always build their nests on the ground. Mr. Nuttall found one in Roxbury containing young about a week old. The nest was on the ground, on the surface of a shelving rock, made of coarse strips of the inner bark of the *Abies canadensis* externally, and internally of soft decayed leaves and dry grasses, and lined with a thin layer of black hair. The parents fed their young in his presence with affectionate attention, and manifested no uneasiness, creeping, head downward, about the trunks of the neighboring trees, carrying large smooth caterpillars to their young. The nests of this bird are strongly and compactly built, externally of coarse strips of various kinds of bark, and lined within with hair and fine stems of grasses. In several instances I have known them to be roofed over at the top, in the manner of the Golden-crowned Thrush. They measure about three inches in their external diameter, and are equally deep.

The nests appear to be a favorite receptacle for the parasitic eggs of the Cow-Bunting. Mr. Robert Ridgway obtained a nest at Mt. Carmel, Ill., in which were four eggs of the *Molothrus* and only two of the parent birds; and Mr. T. M. Tripper, of Orange, N. Y., also found a nest of this Creeper in which were but three of its own and five of the parasite.

The eggs vary in shape from a rounded to an oblong oval, and in size from .69 to .75 of an inch in length, and from .51 to .53 of an inch in breadth. Their ground-color is a creamy-white, to which the deep red markings impart an apparently pinkish tinge. They are marked more or less profusely with bright red dots, points, and blotches. These vary in number and in distribution. In some they are very fine, and are chiefly confined to the larger end. In others they are larger, more diffused, and occasionally there are intermingled marks and blotches of slate-color. The effect of these variations is, at times, to give the appearance of greater differences to these eggs than really exists, the ground-color and the shade of the red markings really presenting but little modifications.

The color of the young nestlings is closely assimilated to that of the objects that usually surround the nest, and helps to conceal them. Mr. Burroughs once came accidentally upon a nest with young of this species. He says: "A Black and White Creeping Warbler suddenly became much alarmed as I approached a crumbling old stump in a dense part of the forest. He alighted upon it, chirped sharply, ran up and down its sides, and finally left it with much reluctance. The nest, which contained three young birds nearly fledged, was placed upon the ground at the foot of the stump, and in such a position that the color of the young harmonized perfectly with the bits of bark, sticks, etc., lying about. My eye rested upon them for the second time before I made them out. They hugged the nest very closely, but as I put down my hand they all scampered off with loud cries for help, which caused the parent birds to place themselves almost within my reach."

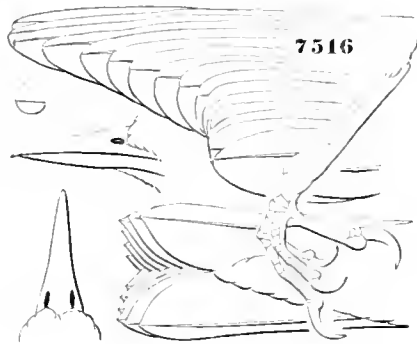
SECTION VERMIVOREÆ.

GENUS **PROTONOTARIA**, BAIRD.

Protonotaria, BAIRD, Birds N. Am. 1858, 239. (Type, *Motacilla citrea*, BODD.)

GEN. CHAR. Characterized by its long, distinctly notched bill, and long wings, which are an inch longer than the slightly graduated tail (the lateral feathers about .12 of an inch shorter). The under tail-coverts are very long, reaching within half an inch of the tip of the tail. The tarsi and hind toe are proportionally longer than in the true Warblers. The notch and great size of the bill distinguish it from the Swamp Warblers. Nest in holes; eggs much blotched with reddish.

The only North American species belonging to the group appears to be the old *Sylvia protonotaria* of Gmelin.



Protonotaria citrea, BAIRD.

Protonotaria citrea, BAIRD.**PROTHONOTARY WARBLER; GOLDEN SWAMP WARBLER.**

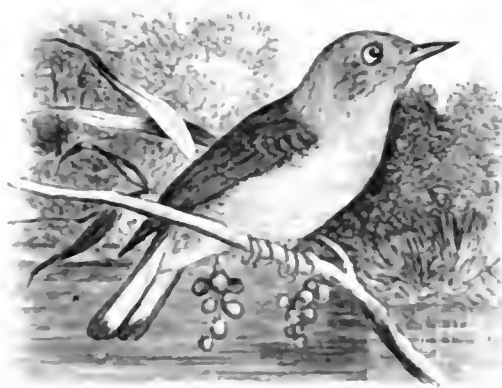
Motacilla citrea, BODD. Tabl. 1783 (Pl. enl. 704, fig. 2). *Protonotaria citrea*, BAIRD, Birds N. Am. 1858, 239; Rev. 173. — SCLATER, Catal. 1861, 26, no. 166. — GUNDEL, Cab. Jour. 1861, 324 (Cuba; very rare). *Helminthophaga citrea*, Cab. Jour. 1861, 85 (Costa Rica). *Motacilla protonotarius*, GM. *Sylvia prot.* LATH. — VIEILL. Ois. Am. Sept. II, pl. lxxxiii. — WILSON, Am. Orn. III, pl. xxiv, fig. 2. — AUD. Orn. Biog. II, pl. iii. *Fernivora prot.* BON. *Helinaia prot.* AUD. *Helminthus prot.* BON. *Compsothlypis prot.* CAB. Jour. *Motacilla auricollis*, GMEL. I, 1788, 984. *Sylvia aur.* LATH., etc. (based on *Le Grand Fiquier du Canada*, BRISSON, Ois. III, 1760, 508, pl. xxvi, fig. 1). Female. *Sylvicola aur.* NUTT. Man. 1, 1840, 431.

SP. CHAR. Bill very large; as long as the head. Head and neck all round, with the entire under parts, including the tibia, rich yellow, excepting the anal region and under tail-coverts, which are white. Back dark olive-green, with a tinge of yellow; rump, upper tail-coverts, wings, and tail above, bluish ash-color. Inner margin of quills and the tail-feathers (except the innermost) white; the outer webs and tips like the back. Length, 5.40; wing, 2.90; tail, 2.25.

HAB. Eastern Province of United States (Southern region); Cuba, Costa Rica, and Panama R. R. Not recorded from Mexico or Guatemala. Accidental in New Brunswick (G. A. BOARDMAN in letter). Yucatan (LAWRENCE).

This is one of the very handsomest of American Warblers, the yellow of the head and lower parts being of a pureness and mellowness scarcely approached by any other species. In a highly colored male from Southern Illinois (No. 10,111, Mississippi Bottom, Union Co., April 23; R. Kennicott) it is stained in spots, particularly over the eyes and on the neck, with a beautiful cadmium-orange.

HABITS. In regard to the habits of this beautiful and interesting Warbler



Protonotaria citrea

we receive but little light from the observations of older ornithological writers. Its geographical distribution is somewhat erratic and irregular. It does not appear to be distributed over a very wide range. It occurs as a migrant in the West Indies and in Central America. In the United States it is found in the Southern region, but farther west the range widens, and in the Mississippi Valley it is found as far north as Kansas,

Southern and Central Illinois, and Missouri. Accidental specimens have been obtained as far to the northeast as Calais, though unknown to all the Eastern States as far south as Southern Virginia. It was met with by none of the government parties except by Dr. Woodhouse, who found it abundant in Texas.

Mr. Audubon observed them, near Louisville, Kentucky, frequenting creeks and lagoons overshadowed by large trees. These were their favorite places

of resort. They also preferred the borders of sheets of water to the interior of the forest. They return in spring to the Southern States early in March, but to Kentucky not before the last of April. They leave in October, and raise but a single brood in a season. Audubon describes their nest, but it differs so essentially from their known mode of breeding, that he was evidently in error in regard to his supposed identification of the nest of this species.

Dr. Bachman, who often met them on the borders of small streams near Charleston, was confident that they breed in that State, and noticed a pair with four young birds as early as June 1, in 1836.

Recently more light has been thrown upon their habits by Mr. B. F. Goss, who, in May, 1863, found them breeding near Neosho Falls, in Kansas. The nest was built within a Woodpecker's hole in the stump of a tree, not more than three feet high. The nest was not rounded in shape, but made to conform to the irregular cavity in which it was built. It was of oblong shape, and its cavity was deepest, not in the centre, but at one end, upon a closely impacted base made up of fragments of dried leaves, broken bits of grasses, stems, mosses, and lichens, decayed wood, and other material, the upper portion consisting of an interweaving of fine roots of wooded plants, varying in size, but all strong, wiry, and slender. It was lined with hair.

Other nests since discovered are of more uniform forms, circular in shape, and of coarser materials, and all are built with unusual strength and care for a nest occupying a sheltered cavity.

In one instance their nest was built in a brace-hole within a mill, where the birds could be closely watched as they carried in the materials, and the parent was afterward taken by hand by Mr. Goss from its nest. It was quite tame, and approached within two yards of him.

Since then Mr. Ridgway has obtained a nest at Mt. Carmel, Ill. It was built in a hollow snag, about five feet from the ground, in the river bottom. So far from being noisy and vociferous, as its name would seem to imply, Mr. Ridgway describes it as one of the shyest and most silent of all the Warblers.

The eggs of this Warbler have an average breadth of .55 of an inch and a length varying from .65 to .70 of an inch. They are of a rounded-oval form, one end being but slightly less rounded than the other. Their ground-color is a yellowish or creamy white, more or less profusely marked over their entire surface with lilac, purple, and a dark purplish-brown.

Mr. Ridgway states that it is always an abundant summer bird in the Wabash bottoms, where it inhabits principally bushy swamps and the willows around the borders of stagnant lagoons or "ponds" near the river, and in such localities, in company with the White-bellied Swallow (*Hirundo bicolor*), takes possession of the holes of the Downy Woodpecker (*Picus pubescens*) and Chickadee (*Parus carolinensis*), in which to build its nest.

Mr. Ridgway adds that in its movements this Warbler is slow and deliberate, like the *Helmitherus vermivorus*, strikingly different in this respect from the sprightly, active *Dendroica*. Its common note is a sharp *pip*, remarkably like the winter note of the *Zonotrichia albicollis*.

It has been taken as far north as Rock Island, Ill., and Dr. Cones mentions the occurrence of one individual near Washington, D. C., seen in a swampy brier-patch, May 2, 1861. This was perhaps only an accidental visitor. If regularly found there, it is probably exceedingly rare. It has not been met with between Washington and St. Stephens, New Brunswick, where its occurrence was unquestionably purely accidental.

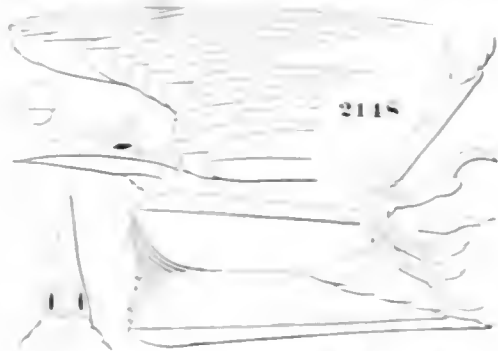
GENUS **HELMITHERUS**, RAF.

Helmitherus, RAFINESQUE, Journal de Physique, LXXXVIII, 1819, 417. (Type, *Motacilla vermivora*.)

Vermivora, SWAINSON, Zool. Jour. IV, 1827, 170 (not of MEYER, 1822).

Helinaia, AUD. Synopsis, 1839, 66. (Type, *Sylvia swainsoni*, AUD.)

GEN. CHAR. Bill large and stout, compressed, almost tanagrine; nearly or quite as long as the head. Culmen very slightly curved;



Helmitherus vermivorus, Raf.

gonys straight; no notch in the bill; rictal bristles wanting. Tarsi short, but little longer, if any, than the middle toe. Tail considerably shorter than the wings; rather rounded. Wings rather long, the first quill a little shorter than the second and third.

The birds of this division are very plain in their colors, more so than any other American Warblers. There are

but two species referable to the genus, of which the *H. swainsoni* differs from the type in having a considerably longer and more compressed bill, the ridge of which is compressed, elevated, and appears to extend backwards on the forehead, as well as to be in a straight line with the upper part of the head. The wings are longer; the tail forked, not rounded; the feathers narrower and more pointed; the tarsi shorter than in the type. It appears to be at least a distinct subgenus to which the name *Helinaia*, AUD., is to be applied.



Helmitherus vermivorus

Species.

COMMON CHARACTERS. Colors plain. Above olivaceous, beneath nearly white. No spots or bands on wing or tail.

H. vermivorus. Above olive-green. Head yellowish, with a black stripe above and one behind each eye. Tail rounded. *Hab.* Eastern Province of United States; south to Costa Rica; Cuba. (*Helmitherus*.)

H. swainsoni. Above dull olive-green, tinged with brown. Stripes on the head somewhat as in the last, but reddish-brown; the median light stripe on the crown scarcely visible. Tail slightly forked. *Hab.* South Carolina and Georgia; Cuba (very rare). (*Helinaia*.)

Helmitherus vermivorus*, BONAP.*WORM-EATING SWAMP WARBLER.**

Motacilla vermivora, GMEL. Syst. Nat. I, 1788, 951. ? *Sylvia vermivora*, LATH. Ind. Orn. II, 1790, 499. — WILS. III, pl. xxiv, fig. 4. — AUD. Orn. Biog. I, pl. xxxiv. *Sylvicola vermivora*, RICH. *Helinaia vermivora*, AUD. Birds Am. II, pl. cv. — LEMBEYE, Av. Cuba, 1850, 35, pl. vi, fig. 4. *Helmitherus vermivorus*, BON. ; CAB. ; BAIRD, Birds N. Am. 1858, 252; Rev. 179. — SCLATER, P. Z. S. 1859, 363 (Xalapa). — IB. Catal. 1861, 28, no. 175. — SCLATER & SALVIN, Ibis, I, 1859, 11 (Guatemala); Cab. Jour. 1860, 329 (Costa Rica); Ib. 1856 (Cuba). — GUNDLACH, Cab. Jour. 1861, 326 (Cuba; somewhat rare). *Vermivora pennsylvanica*, BON., GOSSE, B. Jamaica, 1847, 150. *Helmitherus migratorius*, RAF. J. de Phys. 88, 1819, 417. — HARTLAUB; *Vermivora fulvicapilla*, SWAINSON, Birds, II, 1837, 245.

SP. CHAR. Bill nearly as long as the head; upper parts generally rather clear olive-green. Head with four black stripes and three brownish-yellow ones, namely, a black one on each side of the crown and one from behind the eye (extending, in fact, a little anterior to it), a broader median yellow one on the crown, and a superciliary from the bill. Under parts pale brownish-yellow, tinged with buff across the breast and with olivaceous on the sides. Tail unspotted. Female nearly similar. Length, 5.50; wing, 3.00; tail, 2.35.

In autumnal specimens the light stripes on the head are deeper buff than in spring.

HAB. Eastern Province of United States (rather Southern); Southeastern Mexico; Guatemala; Cuba; Costa Rica; Veragua; Orizaba (winter, SUMMERST.); Yucatan (LAWRENCE).

HABITS. Much remains to be ascertained in regard to the history, habits, and distribution of this interesting species. So far as is now known it is hardly anywhere very common during the breeding-season. Yet its abundance and wide distribution as a migrant during the winter months in various extended localities appear to warrant the belief that it must be correspondingly abundant in summer in localities that have escaped our attention. It has been occasionally met with in the Central and Southern States, as far west as Eastern Mexico, and as far to the north as Southeastern New York. Specimens have been procured from Cuba, Mexico, Central America, and the northern portions of South America. It is a regular winter visitant of Jamaica, whither it goes in the autumn in considerable numbers, and is very widely diffused.

It reaches Pennsylvania about the middle of May, and leaves in September. Wilson noticed a pair feeding their young about the 25th of June.

He supposed this bird to have a more northern distribution than belongs to it. In the interior they are met with, according to Audubon, as far north as the southern shores of Lake Erie, where he found them in the autumn. Mr. Audubon found them more numerous in New Jersey than anywhere else. In Ohio and Kentucky they are comparatively rare. Mr. Ridgway informs me that this is a rather common species in Southern Illinois in the thickest damp woods in the bottom-lands along the Wabash River.

According to Wilson, these birds are among the nimblest of its family, and are remarkably fond of spiders, darting about wherever there is a probability of finding these insects. Where branches are broken and the leaves withered, it searches among them in preference, making a great rustling as it hunts for its prey. Their stomachs are generally found full of spiders and caterpillars.

These birds are arboreal in their preferences, residing in the interior of woods, and are seldom seen in the open fields. They resort to the ground and turn over the dry leaves in quest of insects. They are very unsuspicious and easy of approach.

Nuttall describes their notes and their habits as resembling the common *Parus atricapillus*, and remarks that they are constantly uttering a complaining call, sounding like *tsho-dē-dē*.

Until quite recently, nothing has been positively known in regard to its nesting. Audubon has described its nest as made of dry mosses and the fallen bloom of the hickory and the chestnut, and as built in bushes several feet from the ground. He describes the eggs as cream-colored, marked about the larger end with reddish-brown. These descriptions have not been confirmed, and all our information has led us to look for its nest on the ground.

Mr. Trippe states that it is found, but is not at all common, near Orange, N. Y., where it arrives about the middle of May. It has, at that time, a rapid, chattering note, and it always, he says, keeps near the ground, and, besides its chattering song, has in June a series of odd notes, much like those of the White-breasted Nuthatch, but more varied and musical, yet hardly entitled to be called a song.

Mr. T. H. Jackson of Westchester, Penn., in the American Naturalist for December, 1869, mentions finding the nest and eggs of this bird. We give his account in his own words: "On the 6th of June, 1869, I found a nest of this species containing five eggs. It was placed in a hollow on the ground, much like the nests of the Oven-Bird (*Seiurus aurocapillus*), and was hidden from sight by the dry leaves that lay thickly around. The nest was composed externally of dead leaves, mostly those of the beech, while the interior was prettily lined with the fine, thread-like stalks of the hair-moss, (*Polytrichum*). Altogether it was a very neat structure, and looked to me as though the owner was habitually a ground nester. The eggs most nearly resemble those of the White-bellied Nuthatch (*Sitta carolinensis*), though the markings are fewer and less distinct. So close did the female sit that I captured her without difficulty by placing my hat over the nest."

The same observing ornithologist informs me that this Warbler arrives in Pennsylvania early in May, and makes the most solitary part of the woods its home, outside of which it is rarely seen. True to its name, it is ever busy hunting out and devouring the worms that lurk among the forest foliage, pursuing its avocation in silence, with the exception of a faint note uttered occasionally. This species is not as shy as many of our Warblers that frequent the woods. Towards the latter part of May they commence constructing their nests. Mr. Jackson adds that the nest above referred to was found on a thickly wooded hillside, a few yards above a running stream. So neatly was it embedded in the ground and covered with dry leaves, that discovery would have been impossible had not the female betrayed its position. Both birds exhibited the greatest alarm at his presence, but on his retiring to a short distance the female returned to the nest, where she was easily captured. The base and periphery of the nest were composed of dry beech-leaves, while the inner lining was made of fine hair-mosses (*Polytrichum*).

In the latter part of June, 1871, Mr. Jackson found another nest of this species, containing five young birds about half grown. He was seated on a log, resting after a hard tramp, when a Worm-eating Warbler alighted near him, having a large green worm in its beak. After at first manifesting much uneasiness, and scolding as well as she could, she suddenly became silent and flew to the ground. On his going to the spot both parents flew from the nest. It was in all respects, in regard to materials, manner of construction, and situation, the exact counterpart of the other. Both were placed on steep, wooded hillsides, facing the east.

Two of the eggs of this Warbler thus identified by Mr. Jackson, and kindly loaned to me by him, are of a somewhat rounded-oval shape, less obtuse at one end. They have a clear, crystal-white ground, and are spotted with minute dottings of a bright red-brown. These are much more numerous in one than in the other, and in both are confluent at the larger end, where they are beautifully intermingled with cloudings of lilac-brown. These eggs measure, the one .78 by .60 of an inch: the other, .70 by .56 of an inch.

Another nest of this species, found by Mr. Joseph H. Batty of New York, on the side of a hill near Montclair, N. J., was also built on the ground, in a part of the woods where there was no underbrush, and was placed in a slight hollow, with dry oak-leaves collected around it, and partly covering it. The nest was made of dry leaves, and lined with grasses and fine roots. It contained four eggs, alike in their marking, and corresponding exactly with those obtained by Mr. Jackson. Mr. Batty nearly stepped on the bird without her leaving the nest.

Dr. Coues found the Worm-eating Warbler a rather uncommon summer resident near Washington, breeding there but sparingly. It arrives there during the first week in May, and remains until the third week in September. He describes it as slow and sedate in its movements.

Helmitherus swainsoni, Aud.

SWAINSON'S SWAMP WARBLER.

Sylvia swainsoni, AUD. Orn. Biog. II, 1834, 563, pl. cxviii. *Sylvicola* *sw.* RICH. *Vermivora* *sw.* BON. *Helminthia* *sw.* AUD. Birds Am. II, 1841, pl. civ (type of genus). *Helmitherus* *sw.* BON. ; CAB. ; BAIRD, Birds N. Am. 1858, 252 ; Rev. 1860.

SP. CHAR. Bill as long as the head. Upper parts dull olive-green, tinged with reddish-brown on the wings, and still more on the crown and nape ; a superciliary stripe and the under parts of the body are white, tinged with yellow, but palest on the tail-coverts ; the sides pale olive-brown. There is an obscure indication of a median yellowish stripe on the forehead. The lores are dusky. No spots nor bands on wings or tail. Length, 5.60 ; wing, 2.85 ; tail, 2.20.

HAB. Coast of South Carolina and Georgia ; Cuba (very rare).

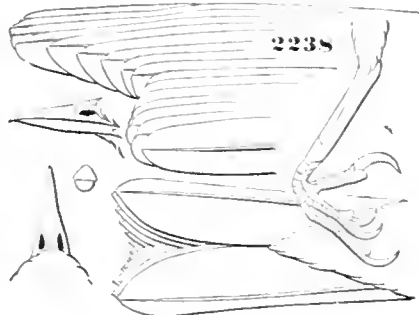
A young bird (No. 32,241 Liberty Co., Georgia) is very similar to the adult described, but differs in the following respects : the lower parts have a decided soiled, sulphur-yellow tinge, while the brown of the upper parts is much more reddish, there being no difference in tint between the crown and back ; also the superciliary stripe is more sharply defined.

HABITS. This species is comparatively rare, and, so far as is known, has a very restricted distribution. It was first discovered by Rev. Dr. Bachman, in the vicinity of Charleston, S. C., near the banks of the Edisto River. This was in the spring of 1832. He was first attracted by the novelty of its notes, which were four or five in number and repeated at intervals of a few minutes. These notes were loud and clear, and more like a whistle than a song. They resembled the sounds of some extraordinary ventriloquist, — so much so that he at first supposed the bird to be much farther off than it really was. He was so fortunate as to secure it. The shape of the bill he at once noticed as being different from that of any other American bird then known to him. In the course of that season he obtained two other specimens. Toward the close of the same season he saw an old female, accompanied by its four young. One of the latter, which he procured, did not differ materially from the old birds.

He met with them only in swampy and muddy places, and when opened, he always found their stomachs filled with fragments of coleopterous insects, as well as small green worms, such as are common on water-plants. The habits of this species most resemble those of the Prothonotary Warbler, as the latter skips among the low bushes growing about ponds or in marshy places. It is seldom seen on high trees. Nothing is known as to their nesting or eggs.

GENUS **HELMINTHOPHAGA**, CABAN.*Helminthophaga*, CABANIS, Mus. Hein. 1850, 1851, 20. (Type, *Sylvia ruficapilla*, WILS.)

GEN. CHAR. Bill elongated, conical, very acute; the outlines very nearly straight, sometimes slightly decurved; no trace of notch at the tip, nor of bristles on the rictus. Wings long and pointed; the first quill nearly or quite the longest. Tail nearly even or slightly emarginate; short and rather slender. Tarsi longer than the middle toe and claw.

*Helminthophaga ruficapilla*.

The species of this section are well characterized by the attenuation and acuteness of the bill, and the absence of any notch. There are, however, considerable subordinate differences in the different species. In some the bill is larger and more acute than others; in one species, the *H. peregrina*, the wings are unusually lengthened, the tail being only about seven twelfths as long.

Species and Varieties.

COMMON CHARACTERS. Iris brown. Length about 5.00. Nest on the ground, in grass or dead leaves. Eggs clear white, thickest at end, with minute dots of brown of various shades and faint purple.

A. Tail with a conspicuous patch of white.*a.* A black patch covering throat and breast.

1. **chrysoptera**. Above ash, beneath white. Forehead and a patch on the wing yellow. *Hab.* Eastern Province of United States, south to Bogota; Cuba.

2. **bachmani**. Above olive-green; beneath, with forehead, yellow; crown ash, bounded anteriorly with a black bar. No yellow on wing. *Hab.* South Carolina and Georgia. Cuba in winter.

b. No black on throat or breast.

3. **pinus**. Above olive-green; beneath, with forehead, yellow; wings ash, with two white bands; lores black. *Hab.* Eastern Province of United States, south into Guatemala.

B. Tail without a conspicuous white patch.*c.* Crown with a concealed patch of rufous (obsolete in ♀).

4. **ruficapilla**. Above olive-green; head ashy; beneath continuous yellow; a light orbital ring. *Hab.* North America (very rare in Middle and Western Provinces); Greenland. South to Southern Mexico (Oaxaca, Cordova, Orizaba).

Yellow of throat spreading over cheeks, and staining lores and eyelids. Atlantic States. (Carlisle, Penn., specimens.) var. *ruficapilla*.

Yellow of throat confined within the maxillæ; lores and eyelids clear white. Mississippi Valley. (Chicago specimens.) var. *ocularis*.

Yellow of throat restricted to a medial stripe, leaving its sides ashy. Middle Province. (Specimen from Fort Tejon, Cal., and East Humboldt Mountains, Nevada.) . . . var. *gutturalis*

5. *virginiae*. Above ash to the rump, beneath white. A patch on the jugulum, with the upper and lower tail-coverts, yellow. *Hab.* Rocky Mountains of United States, west to East Humboldt Mountains.

6. *luciae*. Above ash, beneath continuous white. Upper tail-coverts chestnut. *Hab.* Colorado region of Middle Province.

7. *celata*. Above continuous olive-green, below continuous pale yellow. (Orange on crown in ♂ only?)

Above ashy-olive, beneath yellowish olivaceous-white; inner webs of tail-feathers broadly edged with white. (Middle regions of North America; Mexico.) var. *celata*.

Above greenish-olive, beneath bright greenish-yellow; white edges to inner webs of tail-feathers obsolete. (Pacific Province of North America.) var. *lutescens*.

Similar to var. *celata*, but plumage darker and more dingy. No white edgings to tail-feathers, and apparently *no rufous* on the crown in either sex. (Georgia, Florida, etc.) var. *obscura*.

d. No rufous on crown.

8. *peregrina*. Above olive-green; head and neck pure ash; beneath continuous white. *Hab.* Eastern Province of North America north to Fort Simpson, H. B. T. south to Panama. Cuba (rare).

Helminthophaga chrysoptera, CABAN.

GOLDEN-WINGED WARBLER.

Motacilla chrysoptera, LINN. S. Nat. 1, 1766, 333. *Sylvia chr.* LATH. — WILS. Am. Orn. 11, pl. xv. fig. 5. — BON. *Sylvicola chr.* BON. *Helminthophaga chr.* AUD. Birds Am. 11, pl. cvii. *Helminthorus chr.* BON. — SCLATER, P. Z. S. 1855, 143 (Bogota). *Helminthophaga chrysoptera*, CAB. Mus. Hein; Journ. f. Orn. 1860, 328 (Costa Rica). — BAIRD, Birds N. Am. 1858, 255; Rev. 175. — SCLATER & SALVIS, Ibis, 11, 1860, 397 (Choctum, Guatemala). — SALVIS, 1867, 135. — DRESSER, Ibis, 1865, 477 (San Antonio). — LAWRENCE, ANN. N. Y. Lyc. VII, 1861, 293 (Panama). — GUNDEL, Cab. Journ. 1861, 326 (Cuba, rare). *Motacilla flavifrons*, GMEIN. *Sylvia flavifrons*, LATH.

SP. CHAR. Upper parts uniform bluish-gray; the head above and a large patch on the wings yellow. A broad streak from the bill through and behind the eye, with the chin, throat, and forepart of the breast, black. The external edge of the yellow crown continuous with a broad patch on the side of the occiput above the auriculars, a broad maxillary stripe widening on the side of the neck, the under parts generally, with most of the inner webs of the outer three tail-feathers, white; the sides of the body pale ash-color. *Female* similar, but duller. Length about 5 inches; wing, 2.65; tail, 2.25.



Helminthophaga celata.

HAB. Eastern Province of United States, San Antonio (DRESSER); Cuba (rare); Guatemala; Costa Rica; Panama; Bogota. Recorded in West Indies from Cuba only; not from Mexico. Veragua; Chiriqui (SALVIS).

HABITS. So far as our present knowledge of this Warbler extends, it is nowhere a common species, and is distributed over a comparatively small

extent of territory. Wilson met with it in Pennsylvania during the last of April and the first of May, believing it to be only a migrant species on its way to more northern regions. Nuttall was sceptical of these conclusions, as he never met with the species in the New England States. Audubon observed these birds in their migrations through Louisiana, which State they entered from Texas in the month of April. He procured several specimens in Louisiana and Kentucky, and one in New Jersey. He knew nothing as to its breeding, and seems to have accepted Wilson's inferences in regard to its northern migrations. He never met with this bird in the fall, when, if a Northern species, it should be returning south, and thence inferred that it migrated by night.

Professor Baird has obtained this bird near Carlisle, Penn., in July, rendering probable its breeding in that vicinity. W. S. Wood met with it near St. Louis, May 13, 1857, and two days previously in the same year Mr. Kennicott procured an individual in Southern Illinois. Occasionally specimens have been obtained in Massachusetts, and of late these occurrences have become more frequent or more observed. It was first noticed near Boston by J. Eliot Cabot, Esq., who shot one in May, 1838, near Fresh Pond. This was, he thinks, on the 20th of that month. Since then Mr. J. A. Allen has known of several specimens taken within the State. Mr. Jillson has observed it spending the summer in Bolton, and evidently breeding, as has also Mr. Allen at Springfield, and Mr. Bennett at Holyoke. In the summer of 1870, Mr. Maynard obtained its nest and eggs in Newton.

The late Dr. Gerhardt found it breeding among the high grounds of Northern Georgia. It has also been taken at Racine, Wis., by Dr. Hoy, and in Ohio. These data seem to show that it is sparingly found from Georgia to Massachusetts, and from New Jersey to Missouri and Wisconsin. Its western limits may be more extended. It was not met with by any of the exploring parties beyond St. Louis, but its retiring habits and its sparse distribution may account for this.

Dr. Samuel Cabot was the first naturalist to meet with the nest and eggs of this bird. This was in May, 1837, in Greenbrier County, Va. The nest was constructed in the midst of a low bush on high ground, and contained four eggs.

The late Dr. Alexander Gerhardt found the nest and eggs of this Warbler in the spring of 1859, in Whitfield County, Ga. It contained four eggs, and was built on the ground. It was very large for the bird, being five inches in height and four in diameter. The cavity was also quite large and deep for so small a bird, exceeding three inches both in depth and in diameter. The outer and under portions of this nest were almost entirely composed of the dry leaves of several kinds of deciduous trees. These were interwoven with and strongly bound together by black vegetable roots, dry sedges, and fine strips of pliant bark, and the whole lined with a close network of fine

leaves, dry grasses, and fibrous roots. Dr. Gerhardt informed me that these birds usually build on or near the ground, under tussocks of grass, in clumps of bushes, or pine-brush, and that they lay from four to five eggs, from the 6th to the 15th of May.

The eggs of this species are of a beautiful, clear crystal-white, with a few bright reddish-brown spots around the larger end. Eggs from Racine, Wis., and from Northern Georgia, differ greatly in their relative size. The former measure .70 of an inch in length and .53 in breadth; the latter, .63 by .49.

A single specimen of this species was obtained by Mr. Salvin, at Choctum, in Guatemala.

Helminthophaga bachmani, CABAN.

BACHMAN'S WARBLER.

Sylvia bachmani, AUD. Orn. Biog. II, 1834, 483, pl. clxxxiii. *Sylvicola b.* RICH. *Vermivora b.* BON. *Helinaia b.* AUD. Syn. Birds Am. II, 1841, 93, pl. cviii. — LEMBEYE, Av. Cuba, 1850, 36, pl. vi. fig. 1. *Helmintherus b.* BON. *Helminthophaga b.* CAB. Jour. III, 1855, 475 (Cuba, in winter). — BAIRD, Birds N. Am. 1858, 255; Rev. 175. — GUNDELACH, Cab. Jour. 1861, 326 (Cuba, rare); Rept. 65, 232.

SP. CHAR. Above olive-green, as also are the sides of the head and neck. Hind head tinged with ash. A broad patch on the forehead, bordered behind by black; chin, stripe from this along the side of the throat, and the entire under parts, deep yellow. Throat and forepart of breast black. A patch on the inner web of the outer two tail-feathers near the end white. Length, 4.50; wing, 2.35; tail, 2.05. Female with merely a patch of dusky on the jugulum, and with the black bar on vertex obsolete.

HAB. Coast of South Carolina and Georgia; Cuba in winter.

HABITS. Bachman's Warbler is a comparatively new and but little known species of this interesting group. It was first discovered, July, 1833, by Rev. Dr. John Bachman, a few miles from Charleston, S. C., and in the same vicinity he afterwards discovered a few others of both sexes. He described it as a lively, active bird, gliding among the branches of the thick bushes, occasionally mounting on the wing and seizing insects in the air, in the manner of a Flycatcher. The individual first obtained was an old female which had, to all appearances, just reared a brood of young. With this partial exception, nothing is known in relation to its habits. As all the species of this genus, without any at present known exception, construct their nests upon the ground, it is a natural inference that it probably nests in a similar situation.

The Smithsonian Institution possesses but a single specimen of this bird, obtained near Charleston, S. C. It was not observed by any naturalist of the several governmental exploring expeditions, and, so far as we are at present informed, its only known places of abode are South Carolina and Cuba, where it is extremely rare. Its nest and eggs still remain unknown.

Helminthophaga pinus, BAIRD.**BLUE-WINGED YELLOW WARBLER.**

Certhia pinus, LINN. Syst. Nat. I, 1766, 187. *Sylvia pinus*, LATH., VIEILL. (not of WILSON). *Helminthophaga pinus*, BAIRD, Birds N. Am. 1858, 254; Rev. 174. — SCLATER & SALVIN, Ibis, 1, 1859, 11 (Guatemala). — SCLATER, Catal. 1861, 28, no. 176. *Sylvia solitaria*, WILSON, Am. Orn. II, pl. xv. — AUD. Orn. Biog. I, pl. xx. *Sylvicola sol.* RICH. *Fermivora sol.* SW. *Helinaia sol.* AUD. Birds Am. II, pl. cxi. *Helmintherus sol.* BON. — SCLATER, P. Z. S. 1856, 291 (Cordova). *Helminthophaga sol.* CAB.

SP. CHAR. Upper parts and cheeks olive-green, brightest on the rump; the wings, tail, and upper tail-coverts, in part, bluish-gray. An intensely black patch from the blue-black bill to the eye, continued a short distance behind it. Crown, except behind, and the under parts generally, rich orange-yellow. The inner wing and under tail-coverts white. Eyelids, and a short line above and behind the eye, brighter yellow. Wing with two white bands. Two outer tail-feathers with most of the inner web, third one with a spot at the end, white. Female and young similar, duller, with more olivaceous on the crown. Length, 4.50; wing, 2.40; tail, 2.10.

HAB. Eastern United States and Mexico to Guatemala (Cordova; Coban). Not noted from West Indies.

HABITS. The Blue-winged Yellow Warbler is not known so far to the north as New England, and is rare even in Eastern and Southern New York. It seems to be distributed through the United States from Pennsylvania to Florida, and from the Mississippi Valley eastward. It has also been taken in Central America. Mr. Tripple states that it breeds in the vicinity of Orange, N. Y. Mr. Audubon found it abundant in the barrens of Kentucky, and as far north on the Mississippi as St. Genevieve.

In regard to the song of this bird, Mr. Tripple states that its notes are very forcible and characteristic. Once heard, they will always be remembered. He describes them as a rapid chirrup resembling *chūūchich*, *k'-a-re-r'r'r'r*, uttered very quickly. According to Mr. Ridgway, they are wonderfully similar to the rude lisping chirrup of the *Coturniculus passerinus*.

Wilson says that these Warblers come from the South early in May, frequenting thickets and shrubberies in search of insects, which they seek in the branches. They are also fond of visiting gardens and orchards, gleaning for insects among the low bushes. They generally build their nests on the edge of sequestered woods. These Mr. Wilson states to have been, in every instance observed by him, fixed on the ground, in a thick tussock of long grass, and built in the form of an inverted cone, the sides being formed of the dry bark of strong fibrous weeds lined with fine dry grasses. These materials, he remarks, are not arranged in the usual circular manner, but shelve downward from the top, the mouth being wide and the bottom narrow. He describes the eggs as five in number, pure white, with a few faint dots of reddish near the larger end. The young appear the first week in June. The nests were always in an open but retired part of the woods, and were all as thus described.

According to Mr. Audubon its song consists of a few weak notes that are by no means interesting. His description of its nest agrees with that of Wilson. He states that it usually has two broods in the season, one in May, the other in July. The young disperse as soon as they are able to provide for themselves.

He describes them as of solitary habits, and adds that they leave Louisiana for the South early in October. Its flight is short, undetermined, and performed in zigzag lines. It will ascend twenty or thirty yards in the air as if about to go to a greater distance, when, suddenly turning round, it will descend to the place from which it set out. It rarely pursues insects on the wing, feeding chiefly on the smaller kind of spiders, and seizing other insects as they come within its reach.

The above accounts of its breeding, and especially of its nest, do not correspond with the observations of Mr. Ridgway, near Mt. Carmel, Ill., where the bird is abundant. A nest collected by him is a very loose open structure, composed chiefly of broad, thin, and flexible strips of the inner bark of deciduous trees, chiefly the bass-wood. It contained five eggs, and was obtained May 8. It was first discovered by noticing the bird with materials in her bill. The situation of this nest "was in no wise," says Mr. Ridgway, "as described by Wilson, not having any covered entrance." The nest was very bulky, and so loosely made that only the inner portion could be secured. "I have found other nests," adds Mr. Ridgway, "all corresponding with this one. There can be no doubt as to its identity, as the birds were seen building the nest, and were closely watched in their movements. Both male and female were seen several times." (No. 10,140, Smith. Coll.)

The eggs of this species measure .70 of an inch in length by .53 in breadth. Their ground-color is white, sprinkled with a few reddish-brown spots.

Helminthophaga ruficapilla, BAIRD.

NASHVILLE WARBLER.

Sylvia ruficapilla, WILS. Am. Orn. III, 1811, 120, pl. xxvii, fig. 3. — AUD. Orn. Biog. I, 1832, 450, pl. lxxxix. *Helminthophaga ruficapilla*, BAIRD, Birds N. Am. 1858, 256; Rev. 175. — SCOTTER, P. Z. S. 1859, 373 (Xalapa). — DRESSER, Ibis, 65, 477 (Texas). — COOPER, Orn. Cal. I, 1870, 82. *Sylvia rubricapilla*, WILS. Am. Orn. VI, 1812, 15, General Index. — NUTT., BOS. *Sylvia rub.* RICH. *Troglodytes rub.* BOS. — REINHARDT, Vid. Mch. for 1853, 1854, 82 (Greenland). — BLOMER, Pr. Bost. Soc. N. H. VI, 1856, 4 (nest and eggs). *Helminthophaga rub.* AUD. Birds Am. II, pl. cxiii. *Helminthophaga rub.* BOS. — SCOTTER, P. Z. S. 1856, 291 (Cordova); 1859, 363 (Xalapa). *Helminthophaga rub.* CAP. — SCOTTER, P. Z. S. 1858, 298 (Orizaba; Feb. and Aug.). *Mniotilta rub.* REINHARDT, Ibis, 1861, 6 (Greenland). *Sylvia leucophaea*, SHAW, Gen. Zool. X, II, 1817, 622. "*Sylvia washelli*," VIEILLIOT. — GRAY. *Sylvia macroura*, HOLLAND.

SP. CHAR. Head and neck above and on sides ash-gray, the crown with a patch of concealed dark brownish-orange hidden by ashy tips to the feathers. Upper parts olive-green, brightest on the rump. Under parts generally, with the edge of the wing, deep

yellow; the anal region paler; the sides tinged with olive. A broad yellowish-white ring round the eye; the lores yellowish; no superciliary stripe. The inner edges of the tail-feathers margined with dull white. *Female* similar, but duller; the under parts paler, and with more white; but little trace of the red of the crown. Length, 4.65; wing, 2.42; tail, 2.05.

HAB. Eastern Province of North America; rare in the Middle Province (Fort Tejon, Cal., and East Humboldt Mountains, Nev.); Greenland (REINHARDT); Oaxaca (February and August, SCLATER); Xalapa and Cordova (SCLATER); Orizaba (winter, SUMICHRAST). Not recorded from West Indies.

It is an interesting fact, that, in this species, we find in the yellow a tendency to become more and more restricted as we pass westward. In adult spring males from the Atlantic States this color invades the cheeks, and even stains the lores and eyelids. In two adult spring males from Chicago it is confined within the maxilla, the cheeks being clear ash, and the loreal streak and orbital ring pure white; while in an adult male (autumnal, however) from the East Humboldt Mountains (Nevada, No. 53,354, U. S. Geol. Expl., 40th par.) the yellow is restricted to a medial strip, even the sides of the throat being ashy; the ash invades the back too, almost to the rump, while in Eastern specimens it extends no farther back than the nape. A male (No. 10,656, J. Xantus) from Fort Tejon, Cal., is much like the Nevada specimen, though the peculiar features of the remote Western form are less exaggerated; it is about intermediate between the other specimen and the specimens from Chicago. As there is not, unfortunately, a sufficiently large series of these birds before us, we cannot say to what extent these variations with longitude are constant.

HABITS. The Nashville Warbler appears to be a species of somewhat irregular occurrence; at one time it will be rather abundant, though never very numerous, and at another time comparatively rare. For a long while our older naturalists regarded it as a very rare species, and knew nothing as to its habits or distribution. Wilson, who first met with it in 1811, never found more than three specimens, which he procured near Nashville, Tenn. Audubon only met with three or four, and these he obtained in Louisiana and Kentucky. These and a few others in Titian Peale's collection, supposed to have been obtained in Pennsylvania, were all he ever saw. Mr. Nuttall at first regarded it as very rare, and as a Southern species. In that writer's later edition he speaks of it as a bird having a Northern distribution as far as Labrador. Dr. Richardson records the occurrence of a single straggler in the fur country. So far as known, it occurs as a migrant in all the States east of the Missouri, and is a summer resident north of the 40th parallel. It probably breeds in the high ground of Pennsylvania, though this fact is inferred rather than known. It breeds in Connecticut and Massachusetts, and in Maine in the vicinity of Calais, being more abundant there than anywhere else, as far as has been ascertained.

Two individuals of this species have been taken in Greenland: one at Godthaab, in 1835; and the other at Fiskeræset, August 31, 1840.

In Massachusetts it has so far been found in only a few restricted localities, Andover, Lynn, and Hudson, though it undoubtedly occurs elsewhere. About the time Wilson obtained his first specimen, a living bird of this species flew into the parlor of the late Colonel Thomas H. Perkins of Brookline, and is now in the collection of his grandson, Dr. Cabot. The latter gentleman states that when he first began making collections this Warbler was a very rare visitant to his neighborhood, but has of late become much more common, though varying greatly in this respect in different seasons. Specimens have been obtained in Western Iowa by Mr. H. W. Parker, of Grinnell.

A few instances of its occurrence west of the Mississippi Valley are known. One of these was by Xantus near Fort Tejon; another near Lake Tahoe, in the Sierra Nevada, by Mr. Gruber; and in the East Humboldt Mountains, Nevada, by Mr. Ridgway. Specimens of this Warbler were obtained in the winter by M. Boucard at Oaxaca, Mexico.

In the summer of 1854, Mr. Charles S. Paine found it breeding in Randolph, Vt., but was unable to discover the nest. "They spend the summer," he wrote, "among low bushes, and probably build their nests among the thickets. I have watched their movements on several occasions. Once I detected an old bird with food in her bill about to feed her young. I could hear the young birds, yet was unable to find the nest." Two years later, Mr. George O. Welch, of Lynn, found the nest of this Warbler on the ground in a small thicket. It contained young partially fledged, and one egg unhatched. The nest was built in a slight depression, in a dry place, among fallen leaves and in the shelter of a thicket of young oak-trees. This egg in shape was of a rounded oval, and measured .59 by .50 of an inch; one end was slightly more pointed than the other. The ground-color was white, slightly tinged with pink, and marked over the entire surface with purplish-brown dots. Around the larger end these spots form a beautiful wreath of confluent markings. Since then other nests have been found in the same locality, all on the ground and built in like situations. They have a diameter of four and a height of two inches. The cavity has a diameter of two and a depth of one and a quarter inches. The outer portions are built of dry mosses, intermingled with strips of the bark of the wild grape and the red cedar and a few herbaceous twigs, and lined with a thick layer of dried carices, small leaves of the white pine, and fine grasses. The whole structure is loosely put together. The nests are generally concealed by over-arching leaves, which, however, form no part of the nest itself.

The late Elijah P. Barrow, of Andover, Mass., a young naturalist of much promise, found several nests of this rare Warbler, all of which were concealed by grass. The eggs he found varied in length from .59 to .61 of an inch, and in breadth from .50 to .51 of an inch. Both parents, as observed by him, were entirely silent.

The Nashville Warbler has been said to be a comparatively silent and

songless bird, rarely giving forth any sounds, and these are compared by Dr. Richardson to the creaking noise made by the whetting of a saw. Wilson compares these sounds to the cracking of dry twigs or the striking together of small pebbles. Mr. J. A. Allen speaks of its song as being similar to that of the Chestnut-sided Warbler, which latter bird, as is well known, has notes so closely resembling those of the Summer Yellow-bird that it is difficult to distinguish one from the other by their notes. Mr. T. M. Trippe states, also, that this Warbler has a very fine song, resembling that of the Summer Yellow-Bird more nearly than any other.

These Warblers arrive in Massachusetts about the first of May, and remain about three weeks, when the larger portion move farther north.

More recently Mr. Paine writes me that the Nashville Warbler has of late years become a common bird in certain localities in Central Vermont. They come and keep company with the Canada Warbler, but are more restless than that species at the time of their first appearance. They always in the breeding-season take up their abode in thickets, where there are also tall trees. Mr. Paine adds that their song consists of repetitions of single notes, the last terminating somewhat abruptly. Their song ceases by the 10th of June. After their young are ready to fly, they disperse about the woods and fields, and are then not readily discovered.

***Helminthophaga virginiae*, BAIRD.**

ROCKY MOUNTAIN WARBLER; VIRGINIA'S WARBLER.

Helminthophaga virginiae, BAIRD, Birds N. Am. under explanation of plates, 1860, xi, pl. lxxix, fig. 1 (Fort Burgwyn, N. M.); Rev. 177. — COOPER, Orn. Cal. I, 1870, 85.

SP. CHAR. Somewhat like *H. ruficapilla*. *Male*. Top and sides of head, back, and wings light ashy-plumbeous; quills and tail-feathers brown, edged with pure ashy-plumbeous, the latter indistinctly and narrowly margined with whitish internally and at the end. Rump, with upper and lower tail-coverts, bright yellow, in vivid contrast with the rest of the body. Crown with a concealed patch of rich chestnut. Rest of under parts brownish-white, with a patch of rich yellow on the jugulum. Inside of wings and axillars pure white. A white ring round the eye. Bill and legs dusky. The colors much duller in autumn.

Female, spring. Similar to the male, but chestnut spot on crown obsolete, the yellow jugular patch less distinct, the upper tail-coverts more greenish, and the lower less rich yellow.

Length, 5.00; extent, 7.25; wing, 2.50 when fresh. Dried skin: length, 4.90; wing, 2.50; tail, 2.20; tarsus, .67.

HAB. Southern Rocky Mountains (Middle Province of United States); East Humboldt, Wahsatch, and Uintah Mountains.

A young bird (No. 53,355, East Humboldt Mountains, Nevada, August 5) is olive-gray above, becoming green on the rump and upper tail-coverts; the middle and secondary coverts narrowly tipped with pale grayish-buff, producing two indistinct bands. The lower parts are pale dirty-buff, except the

lower tail-coverts, which are lemon-yellow; there is scarcely a tinge of yellow on the jugulum, and not a trace of chestnut on the crown.

HABITS. But little is as yet known in regard to the habits and distribution of this somewhat rare and recently discovered species. It was first met with by Dr. W. W. Anderson, at Fort Burgwyn in New Mexico, and described by Professor Baird in 1860, in a note to the explanation of Vol. II. of the Birds of North America. It was named in honor of Mrs. Virginia Anderson, the wife of its discoverer. An immature individual of this species was obtained August 15, 1864, by Dr. Coues, at Fort Whipple, near Prescott, in the Territory of Arizona. As it bears a close resemblance to the *Helminthophaga ruficapilla*, it is not improbable that its habits bear a very close resemblance to those of that species.

In the summer of 1869, Mr. Robert Ridgway was so fortunate as to meet with the nest and eggs of this bird near Salt Lake, Utah (Smith. Coll. 15,239). This was June 9. The nest was embedded in the deposits of dead or decaying leaves, on ground covered by dense oak-brush. Its rim was just even with the surface. It was built on the side of a narrow ravine at the bottom of which was a small stream. The nest itself is two inches in depth by three and a half in diameter. It consists of a loose but intricate interweaving of fine strips of the inner bark of the mountain mahogany, fine stems of grasses, roots, and mosses, and is lined with the same with the addition of the fur and hair of the smaller animals.

The eggs were four in number, and measure .64 by .47 of an inch. They are of a rounded-ovoid shape, have a white ground with a slightly roseate tinge, and are profusely spotted with numerous small blotches and dots of purplish-brown and lilac, forming a crown around the larger end.

This bird was first observed by Mr. Ridgway among the cedars and pines of the East Humboldt Mountains, where in July it was quite common. It was very abundant in the Wahsatch Mountains near Salt Lake City, throughout the summer chiefly inhabiting the thickets of scrub-oak on the slopes of the cañons in which they nested, and where they were daily seen, but where, owing to the thickness of the bushes, they were with difficulty obtained. He describes its song as almost exactly like that of *Dendroica astiva*. The usual note is a soft *pit*, quite different from the sharp *chip* of *H. celata*.

Helminthophaga luciae, COOPER.

LUCY'S WARBLER.

Helminthophaga lucia, COOPER, Pr. Cal. Acad. July, 1861, 120 (Fort Mohave). — BAIRD, Rev. Am. B. 1864, 178. — ELLIOT, Illust. Birds N. Am. I, v. — COOPER, Orn. Cal. I, 1870, 84.

SP. CHAR. General form and size that of *H. ruficapilla*. Above light-cinereous; beneath white, having a soiled, very pale buff, almost white tinge on the throat, breast, and flanks.

A patch on the vertex, as in *H. ruficapilla*, and the upper tail-coverts, dark chestnut-brown. Lores to nostrils and region round the eye, like the throat, in rather decided contrast to the ash of the crown. Quills and tail-feathers brown, narrowly edged externally with gray. An obsolete terminal white patch on the inner web of the outer feather; this web in most of the other tail-feathers likewise narrowly edged with white. Axillars and inner face of wings white. Iris brown. Tarsi blue. Length, in life, 4.40; extent, 6.90; wing, 2.40. Length of skin, 3.90; wing, 2.33; tail, 1.86; tarsus, .64; middle toe and claw, .50; bill above, .35; gape, .50.

HAB. Fort Mohave, Colorado River (Middle Province of United States): Fort Whipple, Arizona.

HABITS. This is also a new or recently discovered species of this interesting group of Warblers. In regard to its nest and eggs nothing is positively ascertained, yet as all the birds of this genus are known to build on the ground, and to have a great uniformity in the characteristics of their eggs, it seems to be a matter of natural inference that this species also is a ground builder, and has eggs similar to those of the Nashville Warbler. For the little we know in regard to its habits and distribution, we are indebted to the observations of Dr. J. G. Cooper of California, who first discovered it, and to Dr. Coues, who has since met with it in Arizona.

Dr. Cooper first observed this species near Fort Mohave, where it made its appearance about the last of March. His attention was called to it by its peculiar notes, resembling those of some *Dendroica*, but fainter. After considerable watching and scrambling through dense mezquite thickets in its pursuit, he succeeded in shooting one, and found it to be a new species. Afterwards they became more numerous, frequenting the tops of the mezquite-trees in pursuit of insects, and constantly uttering their short but pleasing notes. About ten days after the first appearance of the males, Dr. Cooper obtained the first female, and thinks that without doubt they are much later in their migrations, as is the case with other Warblers. He was not able to discover their nest, having to leave the valley late in May.

Mr. Holden obtained other specimens of this bird, near the 34th parallel, in March of 1863.

Dr. Coues met with three individuals of this species near Fort Whipple, where it is a summer resident. It arrives there between the 15th and the 20th of April, and remains until the latter part of September. It mates about the last of April, and the young birds appear early in June.

Dr. Coues regards its habits as more like those of the true Ground Warblers than those of the other species of this group. It shows a decided preference for thickets and copses, rather than for high open woods, and is also an exceedingly shy and retiring species. To the extreme difficulty of observing or procuring it Dr. Coues attributes its having so long remained unnoticed.

It is described as exceedingly active in all its motions, and quite as restless as a *Poliophtila*, to which class, in its colors, it also bears a close resem-

blance. The only note Dr. Coues ever heard it utter was a quick and often repeated *tsip*, as slender and as wiry as that of a Gnatcatcher. Dr. Cooper, however, has described its song as rich and pleasing, the little performer being mounted on the top of some mezquite or other bush. Dr. Cooper supposes this species to breed, not in the Colorado Valley, but in the more mountainous regions.

Dr. Coues hazards the conjecture that this bird builds in low bushes. Should it prove so, it would in this respect differ from all the other members of this well-marked group, and from the other Ground Warblers, which, in its general habits, it so much resembles.

***Helminthophaga celata*, var. *celata*, BAIRD.**

ORANGE-CROWNED WARBLER.

Sylvia celata, SAV. Long's Exp. R. Mts. 1, 1823, 169. — BON. Am. Orn. 1, pl. v, fig. 2. — AM. Orn. Biog. 11, pl. clxxviii. *Sylvicola cel.* RICH. *Vermivora cel.* JARD. *Helinaia cel.* AM. Birds Am. 11, pl. cxii. *Helminthopus cel.* BON. — SCLATER, P. Z. S. 1857, 212 (Orizaba). *Helminthophaga cel.* BAIRD, Birds N. Am. 1858, 257; Rev. Am. Birds, 1, 1865, 176 (in part). — DALL & BANNISTER (Alaska). — SCLATER, P. Z. S. 1858, 298 (Oaxaca, December); 1859, 373; 1862, 19 (La Parada). *H. celata*, var. *celata*, RIDGW. Rept. U. S. Geol. Expl. 40th Par.

SP. CHAR. Above grayish olive-green, rather brighter on the rump. Beneath entirely greenish yellowish-white, except a little whitish about the anus; the sides tinged with grayish-olivaceous. A concealed patch of pale orange-rufous on the crown, hidden by the grayish tips to the feathers. Eyelids and an obscure superciliary line yellowish-white, a dusky obscure streak through the eye. Inner webs of tail-feathers broadly edged with white. *Female* with little or none of the orange on the crown, and the white edgings to inner webs of tail-feathers. *Young* lacking the orange entirely, and with two fulvous-whitish bands on the wing. Length, 4.70; wing, 2.25; tail, 2.00.

HAB. Middle Province of North America; Yukon and McKenzie River district. Very rare in the Eastern Province of United States; Mexico in winter; Oaxaca, La Parada (SCLATER); Orizaba, winter (SUMNERAST).

This variety inhabits the interior regions of North America, from the Yukon southward into Mexico; westward, its range meets that of the var. *lutescens* at about the meridian of 116°, while eastward it extends beyond the Mississippi, though rare east of the latter region. Specimens from Southern Illinois (where it is abundant in its migrations) and from Wisconsin are precisely like Rocky Mountain examples; but several in the collection before us from the South Atlantic States (Florida, Georgia, etc.) are so different as almost to warrant their separation as a different variety. These individuals are most like the style of the interior, — var. *celata*, — but are even less yellowish, and the whole plumage is very dark and dingy; all of them, too, lack any trace whatever of orange on the crown. Should all specimens from this region agree in the latter respect, the series from the Southeastern States is certainly entitled to recognition as a variety, for which we propose the name *obscura*.

HABITS. The geographical distribution of *H. celata* is involved in some doubt, owing probably to its irregularity of migration. In a few occasional instances this species has been observed in the Atlantic States. Several have been obtained near Philadelphia. Mr. Audubon affirms to having seen it in the Middle States about the 10th of May, and in Maine later in the month. Beyond that he did not trace it. Mr. J. A. Allen procured one specimen of this bird in Springfield, Mass., May 15, 1863. There were quite a number among the fruit-trees of the garden and orchard, then in bloom, and, mistaking them for *Helminthophaga ruficapilla*, he at first neglected to shoot any, until, being in doubt, he procured one, and found it the Orange-Crown. The group passed on, and one was all he obtained. It is not given by Mr. Turnbull as one of the birds of New Jersey and Pennsylvania, nor by Mr. Boardman or Professor Verrill as occurring in Maine. I am informed by Mr. Ridgway that it is a regular spring and autumn migrant in Southern Illinois, and in some seasons is quite common.

It was taken as a migratory species at Oaxaca, Mexico, during the winter months, by M. A. Boucard.

Mr. Audubon's account of the habits and movements of this species must be received with much caution. His description of its nest is entirely inaccurate, and much that he attributes to this species we have reason to believe relates to the habits of other birds.

On the Pacific coast it seems to be quite abundant, at different seasons, from Cape St. Lucas to the arctic regions, where it breeds. Mr. Kennicott obtained several specimens at Fort Yukon and at Fort Resolution, and Mr. Ross met with them at Fort Simpson. Xantus obtained these birds both at Fort Tejon and at Cape St. Lucas. It is common in Southern California during the winter, frequenting low bushes and the margins of streams. Dr. Gambel met with it in early spring on the island of Santa Catalina, where he had an opportunity of listening to its simple and lively song. This he describes as commencing in a low, sweet trill, and ending in *tshe-up*. It is sometimes considerably varied, but is described as generally resembling *er-r,r,r,r-shè-up*.

Dr. Cooper speaks of this Warbler as an abundant and constant resident of California, near the coast, and found in summer throughout the Sierra Nevada. In March they begin to sing their simple trill, which, he says, is rather musical, and audible for a long distance.

Dr. Coues met with this Warbler in Arizona, at Fort Yuma, September 17, at Fort Mohave, October 1, and also at the head-waters of Bill Williams River. Lieutenant Couch found it at Brownsville, Tex., seeking its food and making its home among the low shrubbery.

Dr. Suckley found it very abundant at Fort Steilacoom, in Washington Territory, where it kept in shady places among thick brush, generally in the vicinity of watercourses. Dr. Heermann found a few pairs incubating near the summits of the highest mountains on the Colorado River. The nests of

this species, seen by Mr. Kennicott, were uniformly on the ground, generally among clumps of low bushes, often in the side of a bank, and usually hidden by the dry leaves among which they were placed. He met with these nests in the middle of June in the vicinity of Great Slave Lake. They were large for the size of the bird, having an external diameter of four inches, and a height of two and a half, and appearing as if made of two or three distinct fabrics, one within the other, of nearly the same materials. The external portions of these nests were composed almost entirely of long, coarse strips of bark loosely interwoven with a few dry grasses and stems of plants. Within it is a more elaborately interwoven structure of finer dry grasses and mosses. These are softly and warmly lined with hair and fur of small animals.

Nests from more arctic regions are of a different style of structure, homogeneous in materials, — which are chiefly stems of small plants and the finer grasses, — and are of a more compact make and smaller in size.

Their eggs are from four to six in number, and vary in length from .70 to .60 of an inch, and in breadth from .50 to .45 of an inch. They have a clear white ground, marked with spots and small blotches of reddish-brown and fainter marking of purplish-slate. The number of spots varies greatly, some eggs being nearly unspotted, others profusely covered.

Mr. Ridgway met with this Warbler in great abundance during its autumnal migration among the shrubbery along the streams of the Sierra Nevada, at all altitudes. In summer it was only seen among the high aspen woods on the Wahsatch Mountains. Fully fledged young birds were numerous in July and August. Their usual note was a sharp *chip*.

This bird was found breeding near Fort Resolution, on the Yukon, at Fort Rae, and at Fort Anderson.

The notice of geographical distribution of the different races, at the beginning of the article, will serve to show to what varieties the preceding remarks severally belong.

***Helminthophaga celata*, var. *lutescens*, RIDGWAY.**

PACIFIC ORANGE-CROWNED WARBLER.

Helminthophaga celata, COOPER & SUCKLEY, P. R. R. XII, ii, 1859, 178. — LOWN, Pt. R. Art. Inst. Woolwich, IV, 1864, 115. — BAIRD, Rev. Am. Birds, I, 1865, 176 (in part). — COOPER, Orn. Cal. I, 1870, 83. *H. celata*, var. *lutescens*, RIDGWAY, Report U. S. Geol. Expl. 40th Par.

SP. CHAR. *Male*. Upper surface continuous bright olive-green. Whole lower parts, including superciliary stripe and eyelids, bright yellow, almost gamboge; abdomen somewhat whitish. Inner webs of tail-feathers just perceptibly edged with white. Whole crown bright orange-rufous, scarcely concealed. Wing, 2.40; tail, 1.90; bill, .40; tarsus, .67; middle toe, .45. Wing-formula, 2, 3, 1, 4. *Female*. Similar, but orange of crown almost obsolete. Wing, 2.30; tail, 1.90. *Young of the year*. Similar to adult, but with

a brownish tinge above; middle and secondary coverts tipped with dull fulvous, furry, inconspicuous bands. No trace of orange on the crown.

HAB. Pacific Province of North America, from Alaska to Cape St. Lucas. Straggling eastward to about the 116th meridian. Not found in Mexico?

The differences between the Pacific coast specimens of the *H. celata* and those from the interior regions — first pointed out in the Review of American Birds — are very readily appreciable upon a comparison of specimens. The present bird is a coast variety, entirely replacing the true *celata* (var. *celata*) in the region above indicated.

Helminthophaga peregrina, CABAN.

TENNESSEE WARBLER.

Sylvia peregrina, WILS. Am. Orn. IV, 1811, 83, pl. xxv, fig. 2. — AUD. Orn. Biog. II, pl. cliv. *Sylvicola per.* RICH. *Fermivora per.* BON. *Helinaia per.* AUD. Birds Am. II, pl. cx. *Helminthus per.* BON. *Helminthophaga per.* CAB. Mus. Hein. — IB. Jour. Orn. 1861, 85 (Costa Rica). — BAIRD, Birds N. Am. 1858, 258; Rev. 178. — SCLATER & SALVIN, Ibis, 1860, 31 (Guatemala). — SCLATER, P. Z. S. 1859, 373 (Oaxaca); Catal. 1861, 29, no. 180. — LAWRENCE, Ann. N. Y. Lyc. 1861, 322 (Panama). — GUNDELACH, Cab. Jour. 1861, 326 (Cuba, very rare). *Sylvia tennesseæ*, VIEILLOT, Encycl. Méth. II, 1823, 452. ? *Sylvia missouriensis*, MAX. Cab. Jour. VI, 1858, 117.

SP. CHAR. Top and sides of the head and neck ash-gray; rest of upper parts olive-green, brightest on the rump. Beneath dull white, faintly tinged in places, especially on the sides, with yellowish-olive. Eyelids and a stripe over the eye whitish; a dusky line from the eye to the bill. Outer tail-feather with a white spot along the inner edge near the tip. Female with the ash of the head less conspicuous; the under parts more tinged with olive-yellow. Length, 4.50; wing, 2.75; tail, 1.85.

HAB. Eastern Province of North America; Calais, Me.; north to Fort Simpson, H. B. T.; Mexico; Oaxaca? Guatemala; Costa Rica; Panama R. R. Very rare in Cuba. Veragua (SALVIN). Chiriqui (LAWRENCE).

Autumnal specimens and young birds are sometimes so strongly tinged with greenish-yellow as to be scarcely distinguishable from *H. celata*. The wing is, however, always longer, and the obscure whitish patch on the inner edge of the exterior tail-feather, near its tip, is almost always appreciable. In *celata* this edge is very narrowly and uniformly margined with whitish.

A young bird of the year, from Fort Simpson (27,228), has two distinct greenish-white bands on the wings, and the forehead and cheeks greenish-yellow. A corresponding age of *H. celata* has the wing-bands more reddish-brown, the wings shorter, and no white patch on the outer tail-feather.

HABITS. Like the Nashville Warbler the present species has received a name inappropriate to one with so northern a distribution. It was first obtained on the banks of the Cumberland River by Wilson, and has since been known as the Tennessee Warbler. But two specimens were ever obtained by him, and he regarded it as a very rare species. He found them hunting

nimbly among the young leaves, and thought they possessed many of the habits of the Titmice. Their notes he described as few and weak, and in their stomachs he found, upon dissection, small green caterpillars and a few winged insects.

Mr. Audubon also regarded it as a rare species, and only three specimens ever fell within his observations. These were obtained in Louisiana and at Key West. He describes them as appearing to be nimble, active birds, expert catchers of flies, and fond of hanging to the extremities of branches, uttering a single mellow *tweet* as they fly from branch to branch in search of food, or while on the wing.

Mr. Nuttall appears not to have met with it. Dr. Richardson procured only a single specimen at Cumberland House, in the latter part of May. This was in a dense thicket of small trees, and was flying about among the lower branches. He was unable to discover its nest, or to learn anything in regard to its habits.

A little more light has since then been given both as to its geographical distribution and its mode of nesting. Specimens of this species have been obtained in Costa Rica, Guatemala, Oaxaca, Mexico, and Panama. A specimen of this species was also taken in Colombia, S. A., by Mr. C. W. Wyatt. Dr. Gundlach mentions it as occasionally found in Cuba. Mr. Drexler secured specimens of it at Moose Factory and at Fort George in the arctic regions. Specimens were taken by Mr. Bernard R. Ross at Fort Simpson. Mr. Robert Kennicott met with it on the northern shores of Lake Winnipeg, June 6. They were then abundant, and had already mated. He again met with them at Fort Resolution, and Mr. Clarke found them at Fort Rae, Mr. W. F. Hall in Maine, Mr. Bell on the Upper Missouri, and Professor Baird in Pennsylvania. Mr. Ridgway has obtained it both in spring and in fall in Southern Illinois, where it is abundant in some seasons. It does not appear to occur on the Pacific coast.

Mr. Boardman writes that the Tennessee Warbler is, in the summer time, quite a common bird in St. Stephens and vicinity. Its notes, he adds, resemble the low, subdued whistle of the common Summer Yellow-Bird.

Mr. Maynard found this Warbler very common near Lake Umbagog during the breeding-season. It was found in all the wooded localities in the regions north of the neighboring mountains. Its song, he states, resembles that of *H. ruficapilla*, the notes of the first part being more divided, while the latter part is shriller.

A nest of this Warbler (Smith. Coll., 3476), obtained on the northern shore of Lake Superior by Mr. George Barnston, is but little more than a nearly flat bed of dry, matted stems of grass, and is less than an inch in thickness, with a diameter of about three inches. It is not circular in shape, and its width is not uniform. Its position must have been on some flat surface, probably the ground. The eggs resemble those of all the family in having a white ground, over which are profusely distributed numerous small dots and points

of a reddish-brown, and a few of a purplish-slate. They are of an oblong-oval shape, and measure .68 by .50 of an inch.

A nest from near Springfield, Mass., obtained by Professor Horsford, the parent bird having been secured, was built in a low clump of bushes, just above the ground. It is well made, woven of fine hempen fibres of vegetables, slender stems of grass, delicate mosses, and other like materials, and very thoroughly lined with hair. It measures two and three fourths inches in diameter and two in height. The cavity is two inches wide and one and three fourths deep. The eggs measure .60 by .50 of an inch, are oblong-oval in shape, their ground-color a pearly white, marked in a corona, about the larger end, with brown and purplish-brown spots.

GENUS **PARULA**, BONAP.

Chloris, BOIE, Isis, 1826, 972 (not of Moehring, 1752). (Type, *Parus americanus*.)

Sylvicola, SWAINSON, Zool. Journ. III, July, 1827, 169. (Not of Humphrey, Mus. Californianum, 1797, 60; genus of land mollusks.) (Same type.)

Parula, BONAP. Geog. & Comp. List, 1838. (Same type.)

Compsothlypis, CABANIS, Mus. Hein. 1850, 1851, 20. (Same type.)

GEN. CHAR. In the species of this genus the bill is conical and acute; the culmen very gently curved from the base; the commissure slightly concave. The notch when visible is further from the tip than in *Dendroica*, but usually is either obsolete or entirely wanting. Bristles weak. The tarsi are longer than the middle toe. The tail is nearly even, and considerably shorter than the wing. Color, blue above, with a triangular patch of green on the back; anterior lower parts yellow.

Two species — one with three varieties — of this genus, as lately restricted, are known in America, only one, however, has as yet been detected within the limits of the United States. They may be distinguished as follows:—

P. americana. Eyelids white. Yellow beneath restricted to anterior half.

Two white bands on wing; a dusky collar across the jugulum. *Hab.* Eastern Province of United States, south to Guatemala; Bahamas; Cuba; Jamaica; St. Croix; St. Thomas.

P. pitiayumi. Eyelids dusky. Yellow beneath, extending back along sides to the crissum.

Two white bands on wing.

Above plumbeous-blue; lores and eyelids deep black. Abdomen wholly yellow. Wing, 2.20; tail, 1.75. *Hab.* South America from Bogota to Paraguay var. *pitiayumi*.¹

Above ashy-blue; lores and eyelids scarcely darker. Abdomen wholly white. Wing, 2.35; tail, 2.05. *Hab.* Tres Marias Islands, Western Mexico var. *insularis*.²

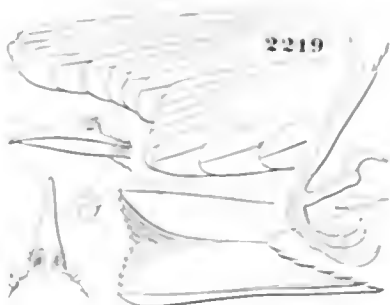
¹ *Sylvia pitiayumi*, VIEILL. Nouv. Dict. II, 1816, 276. *Parula pit.* SCLAT. Catal. 26, no. 165. — BAIRD, Rev. Am. Birds, I, 1865, 170.

² *Parula insularis*, LAWR. Ann. N. Y. Lyc. X, Feb. 1871.

Only a trace of white on wings, or none at all.

Above indigo-blue. Wing, 2.10; tail, 1.70. Hab. Costa Rica and Guatemala var. *inornata*!

Compsothlypis gutturalis, CABANIS (*Parula gut.*, BAIRD, Rev. Am. B.), and



Parula americana, Bonap.

Conirostrum superciliosum, HARTLAUB (*Parula superciliosa*, BAIRD, Rev.), have been referred by later systematists to this genus; but they are much more closely related to *Conirostrum*, — a genus usually assigned to the *Correbular*. The "*P.*" *gutturalis* is confined to Costa Rica; but "*P.*" *superciliosa* is a species of the table-lands of Mexico, and likely to be detected in Arizona or New Mexico. The characters of this species are as follows:—

Conirostrum superciliosum, HARTL. R. Z. 1844, 215. Whole dorsal region, including rump, olive-green: rest of upper parts ashy. Anterior half beneath yellow, with a crescentic bar of chestnut-brown across the jugulum: posterior lower parts white, ashy laterally. A conspicuous superciliary stripe of white. Wing, 2.60; tail, 2.10.

Parula americana, BONAP.

BLUE YELLOW-BACKED WARBLER.

Parus americanus, LINN. Syst. Nat. 10th ed. I, 1758, 199. *Motacilla am.* GMELIN. *Sylvia am.* LATH., AUD. *Sylvicola am.* RICHL., AUD. — JONES, Nat. in Bermuda, 1839, 59. *Parula am.* BON. List Birds N. Am. 1838. — GOSSE, Birds Jam. 1847, 154 (Jamaica). — BAIRD, Birds N. Am. 1858, 238; Rev. 169. — SCIATER, P. Z. S. 1857, 202 (Xalapa). — IB. Ibis, 1859, 10 (Guatemala). — IB. Catal. 1861, 26, 163. — NEWTON, Ibis, 1859, 143 (Santa Cruz; winter). — CASSIN, Pr. A. N. S. 1860, 376 (St. Thomas). — GUNDMACH, Cal. Jour. 1861, 326 (Cuba; very common). *Compsothlypis am.* CAL. Mus. Hein. 1850, 20. — IB. Jour. III, 1855, 476 (Cuba). *Ficedula ludoviciana*, BRISSON. *Motacilla lud.* GM. *Motacilla eques*, BODD. *Sylvia torquata*, VIEILL. *Thryothorus torq.* STEPHENS. *Sylvia pusilla*, WILS. *Sylvicola pus.* SWAINS.

Figures: AUD. Orn. Biog. I, pl. xv. — In. Birds Am. II, pl. xci. — VIEILL. Ois. Am. II, pl. xcix. — WILS. Am. Orn. IV, pl. xxviii. — BUFFON, pl. enl. decxxxi, fig. 1; decix, fig. 1.

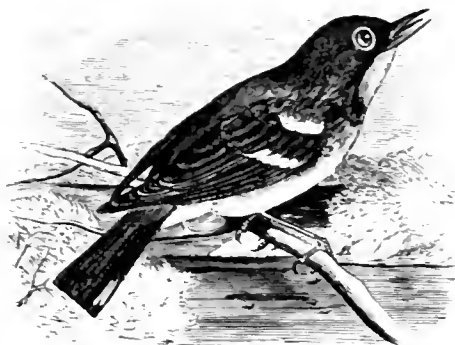
SP. CHAR. Above blue, the middle of the back with a patch of yellowish-green. Beneath yellow anteriorly, white behind. A reddish-brown tinge across the breast. Lores and space round the eye dusky; a small white spot on either eyelid; sides of head and neck like the crown. Two conspicuous white bands on the wings. Outer two tail-feathers with a conspicuous spot of white. Female similar, with less brown on the breast. Length, 4.75; wing, 2.34; tail, 1.90. Nest of long moss.

HAB. Eastern Province of United States, north to the Lakes ("Greenland"), west to the Missouri Valley; in winter, south to Guatemala (not seen on the west coast of Mexico). West Indies; Bahamas; Cuba; Jamaica; St. Croix; St. Thomas; Jalapa, Guatemala (SCIATER); Orizaba, winter (SUMICHRAST); Yucatan (LAWRENCE); Porto Rico and Inagua (BRYANT).

¹ *Parula inornata*, BAIRD, Rev. Am. Birds, I, 1865, 171.

Autumnal males are browner on the chin, yellower on the throat and jugulum. Head tinged with greenish; secondaries edged with greenish-yellow. Autumnal females are light greenish-olive above, dirty-white beneath.

In very brightly colored spring males, there is frequently (as in 58,335, Philadelphia) a well-defined, broad blackish band across the jugulum, anterior to an equally distinct and rather broader one across the breast, of a brown tint, spotted with black, while the sides are much spotted with chestnut-brown; the blue above is very pure, and the green patch on the back very sharply defined.



Parula americana.

HABITS. The Blue Yellow-Back is one of our most interesting and attractive Warblers. Nowhere very abundant, it has a well-marked and restricted area within which it is sparingly distributed. It is found from the Mississippi Valley to the Atlantic, and from Canada southward. In its winter migrations it visits the West Indies, the Bahamas, and Central and South America. Halifax on the east, and Platte River on the west, appear to be the northern limit of its distribution. Dr. Woodhouse met with it in the Indian Territory during the breeding-season. Mr. Alfred Newton found this species, apparently only a winter visitant, in the island of St. Croix. Most of the birds left about the middle of March, though a few remained until early in May.

A single specimen of this species was taken at South Greenland in 1857.

This Warbler has been found breeding as far to the south as Tuckertown, N. J., by Mr. W. S. Wood; and at Cape May, in the same State, by Mr. John Krider. At Washington, Dr. Coues found it only a spring and autumn visitant, exceedingly abundant from April 25 to May 15. Possibly a few remained to breed, as he met with them in the first week of August. In the fall they were again abundant from August 25 to the second week in October. He found them inhabiting exclusively high open woods, and usually seen in the tops of the trees, or at the extremities of the branches, in the tufts of leaves and blossoms.

Even where most common it is not an abundant species, and is to be found only in certain localities, somewhat open and swampy thickets, usually not of great extent, and prefers those well covered with the long gray lichens known as Spanish moss. In such localities only, so far as I know, do they breed.

This Warbler has also been ascertained to breed in Southern Illinois, where Mr. Ridgway found it in July, engaged in feeding fully fledged young birds. It is there most common in spring and fall.

A true Warbler in most of its attributes, this bird has many of the habits of Titmice. Like these it frequents the tops of the taller trees, feeding on the small winged insects and caterpillars that abound among the young leaves and blossoms. It has no song, properly so called, its notes are feeble and few, and can be heard only a short distance.

The song of this species is said by Mr. Trippe, of Orange, N. Y., to be a somewhat sharp and lisping, yet quite varied and pleasing, series of notes.

Mr. Audubon speaks of this species as breeding in Louisiana, but his description of the nest differs so entirely from such as are met with in Massachusetts as to suggest doubts as to the correctness of the identification. He describes them as flitting over damp places, the edges of ponds and streams, and pursuing their prey with great activity. They resort to the woods as soon as the foliage appears on the forest trees, and glean among the leaves for the smaller winged insects.

The nests of this Warbler, so far as has fallen under my observation, have always been made of long gray lichens still attached to the trees on which they grow. With great skill do these tiny architects gather up, fasten together, and interweave, one with the other, the hanging ends and longer branches. By an elaborate intertwining of these long fibres they form the principal part, sometimes the whole, of their nests. These structures are at once simple, beautiful, ingenious, and skilfully wrought. When first made, they are somewhat rude and unfinished, but as their family are gathered, the eggs deposited, incubated, and hatched, a change has been going on. Little by little has the male bird busied himself, when not procuring food for his mate, in improving, strengthening, and enlarging the nest. These same acts of improvement upon the original nests are noticed with Humming-Birds, Vireos, and a few other birds.

The nests are sometimes constructed on the sides of trunks of trees, when covered with the long gray lichens, but are more frequently found hanging from branches usually not more than six or eight feet from the ground. Thus surrounded by long hanging mosses in clumps not distinguishable from the nests themselves, they would not be readily recognized were it not that those familiar with the habits of the bird may be readily guided to the spot by the artless movements of the unsuspecting parents.

These birds are confiding, easily approached, and rarely exhibit any signs of alarm. Even when their nest is disturbed they make but little complaint, and do not manifest any very great signs of emotion. When built against a trunk these nests consist only of an interweaving of the moss above and below a very small opening, within which a small cup-shaped flooring has been made of the same material, and usually cannot be removed without destroying all semblance of a nest. When pensive they are imperfectly circular in shape, with an entrance on one side, and rarely with any lining. Occasionally they are models of symmetry and beauty.

The eggs, four or five in number, have a clear white ground, and are sparingly spotted with markings of reddish-brown, slate, purple, and lilac. In some the first predominate, in others the last three shades are more abundant, and usually form a confluent ring around the larger end. They measure from .62 to .65 of an inch in length, and from .49 to .50 in breadth.

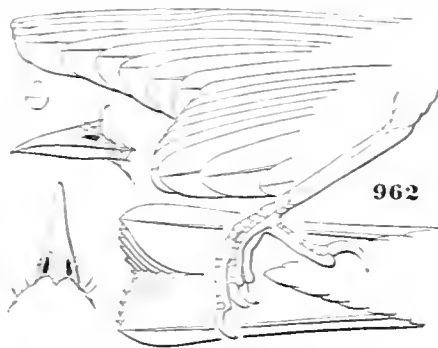
SECTION SYLVICOLEÆ.

This section has been already characterized as having a distinctly notched bill, well provided with bristles. Of the two genera one, *Perissoglossa*, has the bill slender, acute, something like *Helminthophaga*, and with the tongue lengthened and much lacerated at end; the other, *Dendroica*, with less acute bill and tongue shorter, merely notched at tip, and a little fringed only.

GENUS **PERISSOGLOSSA**, BAIRD.

Perissoglossa, BAIRD, Rev. Am. Birds, 1864, 181. (Type, *Motacilla tigrina*, GM.)

GEN. CHAR. Form of *Dendroica*, but bill slender, acute, with very obsolete notch; the commissure gently arched or curved from the base; the gonys also straight, or even slightly concave. Tongue lengthened, narrow, deeply bifid (for one third), and deeply lacerated or fringed externally at the end; the edge along the median portion folded over on the upper surface, but not adherent.



Perissoglossa tigrina, Baird.

The curvature of the bill in *Perissoglossa tigrina* is quite peculiar among the *Sylvicolidae* with notched bills. Some *Helminthophagas* (without notch) approximate this character, though in none, excepting *H. bachmani*, is it in equal amount, — all the others having the gonys very slightly convex, instead of straight, or even slightly concave.

It is most probable that the *Helinaia carbonata* of Audubon belongs here, as it appears very closely allied to the type of this genus. The two species may be distinguished as follows: —

COMMON CHARACTERS. *Male*. Top of head black. Above olive, becoming yellowish on rump. Head, neck, and lower parts bright yellow, becoming whitish posteriorly. Dorsal feathers with black centres; breast and sides streaked with black. A black streak through the eye.

P. tigrina. Large white patches on inner webs of tail-feathers.

Sides of head and middle of throat tinged with chestnut. One large white patch on wing, covering both rows of coverts. Outer web of lateral tail-feather blackish.

P. carbonata. No white patches on tail-feathers.

No chestnut about head. Two bands on the wing, the anterior one white, the posterior yellow. Outer web of lateral tail-feather whitish.

Perissoglossa tigrina, BAIRD.

CAPE MAY WARBLER.

Motacilla tigrina, GILLIS, Syn. Nat. 1, 1788, 985. *Sylvia tig.* LATH. *Dendroica tig.* BAIRD, Birds N. Am. 1858, 286. — SCLATER, Catal. 1861, 33, no. 198; P. Z. S. 1861, 71 (Jamaica, April). — MARCH, Pr. An. Sc. 1863, 293 (Jamaica; breeds). — A. & E. NEWTON, Ibis, 1859, 144 (St. Croix. Notes on anatomy of tongue). — GUNDELACH, Cab. Jour. 1861, 326 (Cuba; not rare). — SAMUELS, 240. *Perissoglossa tigrina*, BAIRD, Rev. Am. Birds, 1864, 181. *Sylvia maritima*, WILSON, Am. Orn. VI, 1812, 99, pl. liv, fig. 3. — BON.; NUTT.; AUD. Orn. Biog. V, pl. cccxiv. — D'ORB. La Sagra's Cub. 1840, 70, pl. x. *Sylvicola mar.* JARD., BON., AUD. Birds Am. II, pl. lxxxv. *Certhiola mar.* GOSSE, Birds Jam. 1847, 81. — IB. Illust. *Rhimamphus mar.* CAB. Jour. III, 1855, 474 (Cuba.)

SP. CHAR. Bill very acute, conical, and decidedly curved. Bill and feet black. Upper part of head dull black, some of the feathers faintly margined with light yellowish-brown. Collar scarcely meeting behind; rump and under parts generally rich yellow. Throat, forepart of breast, and sides, streaked with black. Abdomen and lower tail-coverts pale yellow, brighter about the vent. Ear-coverts light reddish-chestnut. Back part of a yellow line from nostrils over the eye of this same color; chin and throat tinged also with it. A black line from commissure through the eye, and running into the chestnut of the ear-coverts. Back, shoulder, edges of the wing and tail, yellowish-olive; the former spotted with dusky. One row of small coverts, and outer bases of the secondary coverts, form a large patch of white, tinged with pale yellow. Tertiaries rather broadly edged with brownish-white. Quills and tail dark brown, the three outer feathers of the latter largely marked with white on the inner web; edge of the outer web of the outer feathers white, more perceptible towards the base. Length, 5.25; wing, 2.84; tail, 2.15.

Female. Above olivaceous-ash, most yellowish on rump; no black nor chestnut on head. Wing-coverts inconspicuously edged with whitish. Tail-spots very inconspicuous. Beneath dull white tinged with yellowish on the breast, and streaked as in the male, but with dusky grayish instead of black.

HAB. Eastern Province of United States, north to Lake Winnipeg and Moose Factory; all the West Indies to St. Croix. Breeds in Jamaica. Not recorded from Mexico or Central America.

The chestnut about the head in adult males varies in amount with the individual; sometimes (as in 20,633, May, Moose Factory, Hudson's Bay Territory) there is an oblong spot of chestnut in the middle of the crown, but generally this is absent. Very frequently the chestnut tinges the throat. All variations in these respects appear, however, to be individual, and not dependent at all on locality. West Indian specimens appear to be absolutely identical with those from North America.

Autumnal specimens are browner, the chestnut markings much obscured.

HABITS. This somewhat rare species, so far as its history and distribution are known with certainty, is migratory in the principal portions of the United

States, in the spring and fall passing to the north of the 42d parallel to breed. The first specimen was obtained near the extreme southern point of New Jersey by George Ord, in 1811, and described and figured by Wilson. From this accidental circumstance it derives its inappropriate name of Cape May Warbler. Wilson never met with a second specimen, and Mr. Nuttall was wholly unacquainted with it. Mr. Audubon also never met with a specimen in all his wanderings, and was able to add nothing to its history. Those figured by him were procured by Mr. Edward Harris, near Philadelphia, through which region these birds appear to pass rapidly in their northern migrations.

Mr. J. A. Allen obtained a specimen near Springfield, Mass., May 15, 1863, and specimens have also been procured at East Windsor Hill, Conn., by Dr. Wood. It was not met with in Western Maine by Mr. Verrill, but in Eastern Maine and in New Brunswick Mr. Boardman has found it a not uncommon summer visitant, though of irregular frequency. He has no doubt that they remain there to breed. They reach Calais as early as the second week in May, or as early as their appearance usually in the neighborhood of Philadelphia has been noticed. Mr. Kumlien has also obtained specimens from year to year, about the middle of May, in Southern Wisconsin, where they do not remain to breed, and Mr. Ridgway has taken them in the beginning of May in Southern Illinois.

It is also by no means uncommon in Cuba; was met by the Newtons as a migrant in St. Croix, and is not only one of the birds of Jamaica, but is resident and breeds in the highlands of that island. It is not known to occur in Central America, Mexico, or west of the Mississippi River. Specimens were procured at Moose Factory about May 28.

Its nests and eggs have not been, with certainty, obtained in the United States, though an egg obtained in Coventry, Vt., in 1836, and attributed at the time to this bird, closely resembles its identified eggs from Jamaica. Specimens of the bird, as well as its nests and eggs, have also been received from St. Domingo by Mr. Turnbull of Philadelphia. In the summer of 1871 a nest of this species was found by Mr. H. B. Bailey on the Richardson Lakes, in the extreme northwestern part of Maine. The nest was in a low spruce-tree, less than five feet from the ground, and when found contained only a single egg. Unfortunately it was left until more eggs were deposited, and in the mean while the tree was cut, and the nest and eggs were destroyed.

Mr. W. T. March of Jamaica, in his notes on the birds of that island, states that this species may always be found, in its various changes of plumage, about the mangrove swamps and river-banks. During the summer months it was common about Healthshire and Great Salt Pond, and at other times very generally distributed over the island. He also met with several specimens of its nests and eggs, but their position was not stated. The nests had apparently been taken from a bush or tree, were three and one fourth

inches in diameter by two and one half in height, with cavities unusually large and deep for the size of the nests. They were wrought almost entirely of long strips of thin flexible bark, strongly and firmly interwoven. The outer portions consisted of coarser and longer strips, the inner being much finer and more delicate. With the outer portions were also interwoven bits of mosses, lichens, and the outer bark of deciduous trees. The entire fabric was a remarkable one.

The eggs measure .70 by .55 of an inch, have a pinkish-white ground, blotched with purple and brown of various shades and tints. They are disposed chiefly about the larger end, usually in a ring. The eggs are oval in shape and slightly pointed at one end.

Perissoglossa carbonata, BAIRD.

CARBONATED WARBLER.

Sylvia carbonata, AUD. Orn. Biog. I. 1831, 308, pl. lx (Kentucky). — NUTT. *Helinaia carbonata*, AUD. Syn. — Ib. Birds Am. II, 1841, 95, pl. cix. *Dendroica carbonata*, BAIRD, Birds N. Am. 1858, 287; Rev. Am. Birds, 297.

SP. CHAR. Bill brownish-black above, light blue beneath. Iris hazel. Feet light flesh-color. Upper part of the head black. Forepart of the back, lesser wing-coverts, and sides dusky, spotted with black. Lower back dull yellowish-green, as is the tail, of which the outer web of the outer feather is whitish. Tip of the second row of coverts white, of the first row yellow; quills dusky, their outer webs tinged with yellow. A line from the lore over the eye; sides of the neck and the throat bright yellow. A dusky line behind the eye. The rest of the under parts dull yellow, excepting the sides. Length, 4.75 inches; bill above, 4.42; tarsus, .75. (AUDUBON).

HAB. Kentucky.

This species continues to be known only by the description and figure of Audubon.

Judging from the description, this species is closely related to *P. tigrina*, but seems to be distinct in the pure black of the top of the head, the absence of orange-brown on the cheeks, the white of the wing being on the middle coverts instead of the greater, and the tail-feathers being yellowish-green; the outer web of outer feather white, instead of a large spot on the inner web, etc. The back appears more distinctly streaked.

HABITS. Two specimens of this Warbler, obtained near Henderson, Ky., May, 1811, by Mr. Audubon, are all its claim to be recognized as a good species. None have since been seen. These birds are described as having been busily engaged in collecting insects among the branches of a dogwood tree. Their motions were like those of other Warblers. This is all we as yet know as to the history of this species, and its claims to be regarded as a good and distinct species are involved in doubt.

GENUS **DENDROICA**, GRAY.

Sylvicola, GRAY, Genera Birds, 2d ed. 1841, 32. (Not of Humphreys nor Swainson.)

Dendroica, GRAY, Genera Birds, Appendix, 1842, 8.

Rhimamphus, HARTLAUB, Rev. Zool. 1845, 342. (Not of Rafinesque, Am. Monthly Mag. 1818, and Jour. de Phys. 1819.)

GEN. CHAR. Bill conical, attenuated, depressed at the base, where it is, however, scarcely broader than high, compressed from the middle. Culmen straight for the basal half, then rather rapidly curving, the lower edge of upper mandible also concave. Gonys slightly convex and ascending. A distinct notch near the end of the bill. Bristles, though short, generally quite distinct at the base of the bill. Tarsi long; decidedly longer than middle toe, which is longer than the hinder one; the claws rather small and much curved; the hind claw nearly as long as its digit. The wings long and pointed; the second quill usually a very little longer than the first. The tail slightly rounded and emarginate.

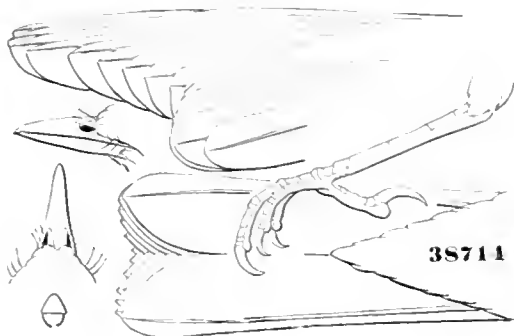
Colors. Tail always with a white or yellow spot; its ground-color never clear olive-green. In *D. aestiva* edged internally with yellow.

Eggs usually with a white or a bluish-white ground, marked with purplish-brown and obscure lilac; in some, mingled with varying shades of sienna-brown. Nest, so far as known, in bushes and trees, except *D. palmarum*, which is on the ground.

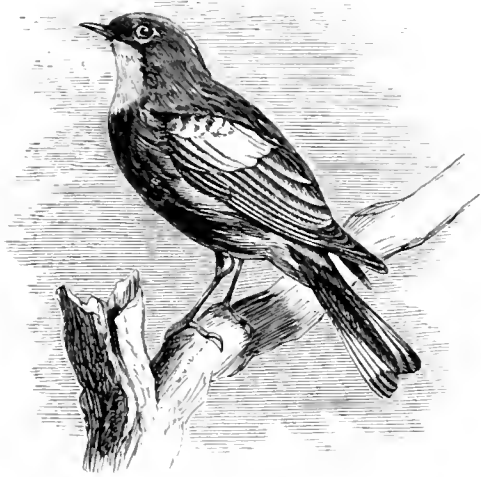
The genus *Dendroica* is one of the most extensive as to species of any in North America, and scarcely admits of any subdivision. There is a little variation in the bill, wings, etc., the chief peculiarities being in *D. castanea* and *pennsylvanica*, in which the bill is broader, and more depressed, with longer bristles; in *D. striata*, where the bill is narrow with scarcely any bristles; and in *D. palmarum* and *kirtlandi*, where the wings are very short, scarcely longer than the tail. *D. palmarum* has the tarsus unusually long. The colors in all are strongly marked, and the species are among the most beautiful of all belonging to our fauna, and are the most conspicuous for their numbers and in their migrations.

The difference in manners between certain members of this genus is remarkable; thus, the *D. palmarum* is very terrestrial in its habits, walking upon the ground with the ease and grace of a Titlark (*Anthus*), and, like these birds, it has a wagging motion

of the tail. On the other hand, the *Dendroica dominica* is as much a



Dendroica coronata.



Dendroica auduboni.

Creeper as is the *Mniotilta varia*; creeping not only along the branches, but the cornices and lattices of buildings, with the facility of a Nuthatch (*Sitta*). Both these species, however, may often be seen hopping among the foliage of the trees, now and then snapping an insect on the wing, in the manner of others of the family.

Species and Varieties.

Inner webs of tail-feathers with a large patch, or broad edge, of yellow GROUP A.
Inner webs of tail-feathers with a large patch, or broad edge, of white.

Wings with conspicuous white markings GROUP B.

Wings without conspicuous white markings¹ GROUP C.

Group A. — *Golden Warblers*.

Rump and crissum without rufous markings Series I.

Rump and crissum with rufous markings Series II.

Series I.

Prevailing color rich yellow, shaded on upper parts with olive-green. ♂ with streaks of chestnut across the breast and along the sides, and with or without a greater or less tinge of the same on the crown. ♀ with the streaks beneath obsolete or entirely wanting; no rufous on crown. *Juv.* paler and duller than the ♀, sometimes quite ashy.

A. Tarsus less than .65 of an inch. Outer webs of tail-feathers with yellow predominating.

1. **D. *æstiva*.** Crown generally pure yellow, sometimes with only a tinge of rufous;² lower webs of wing-coverts and tertials pure yellow; rump and upper tail-coverts much mixed with the same. Wing-formula,³ 1 = 2, 3; wing, 2.60; tail, 2.05; bill, from nostril, .30; tarsus, .62. *Hab.* Entire continent of North America; in winter south to Bogota and Cayenne; Trinidad (only locality in West Indies).

B. Tarsus not less than .70 of an inch. Outer webs of tail-feathers with dusky predominating.

a. Crown without any rufous, or with only a tinge.

2. **D. *petechia*.** *Nape olive-green* (except in *jur.*); *sides streaked* (except in *jur.*). Crown greenish, sometimes tinged with orange-rufous anteriorly; lower webs of wing-coverts, etc., not pure yellow, and rump and upper tail-coverts without any admixture of yellow. *Hab.* West Indies (except Barbadoes and Trinidad); not on the Continent.

Lower part of throat streaked; outer webs of wing-coverts hardly appreciably different from the general surface. Above golden yellowish-olive; crown generally without a trace of rufous. Wing-formula, 2 = 3, 4, 1, 5; wing, 2.55; tail, 2.10; bill, .30; tarsus, .80. *Hab.* Cuba and the Bahamas var. *gundlachi*.⁴

Lower part of throat not streaked; outer webs of wing-coverts decidedly yellowish, and quite different from the general surface. Above greenish yellow-olive; crown almost always strongly tinged

¹ Or if with white markings, the prevailing color yellow, as in *D. pinus*, in which only the adult ♂ has the wing-bands ashy-white.

² The wing-formula, though varying among individuals, is nevertheless in a measure characteristic. An average specimen is in each case chosen.

³ *D. gundlachi*, BAIRD, Review Am. B. 1, 1865, 197.

with rufous. Wing-formula, 4, 3, 2, 5, 1, 6; wing, 2.70; tail, 2.25; bill, .35; tarsus, .79. *Hab.* Jamaica and Hayti? var. *petechia*.¹

c. Whole throat sometimes streaked; back also sometimes with streaks of dark castaneous; green above lighter than in var. *petechia*, the rump sometimes tinged with yellow. Wing-formula, 2, 3, and 4 equal, 5 = 1; wing, 2.50; tail, 2.00; bill, .34; tarsus, .78. *Hab.* Porto Rico, St. Thomas, St. Croix, and St. Bartholomew.

var. *ruficapilla*.²

3. *D. aureola*.³ *Nape always ashy; sides never streaked.* Abdomen, anal region, and axillars nearly white; forehead and crown strongly tinged with rufous; nape dark ashy. Wing-formula, 2, 3, and 4 equal, 5, 1 = 6; wing, 2.55; tail, 2.00; bill, .32; tarsus, .75. *Hab.* Galapagos Islands.

b. Crown with only a sharply defined ovate patch of dark purplish-rufous.

4. *D. capitalis*.⁴ A broad superciliary stripe of pure yellow; wing-formula, 3 = 4, 2, 1 = 5; wing, 2.30; tail, 2.00; bill, .30; tarsus, .70. (♀ distinguishable from that of the varieties of *petechia* by the distinctly yellow upper eyelid, and considerably shorter tarsus.) *Hab.* Barbadoes Island, West Indies.

c. Head all round rufous.

5. *D. vieillotii*. (♀ not distinguishable from that of other species.) *Hab.* Continental Middle America.

Breast and sides with broad streaks of rufous; outer webs of wing-coverts and tertials pure yellow.

Rufous of the throat with the posterior outline sharply defined against yellow of jugulum. Wing-formula, 3, 4, 2, 1, 5; wing, 2.75; tail, 2.10; bill, .34; tarsus, .75. *Hab.* New Granada (Carthagen, etc.) var. *vieillotii*.⁵

Rufous of the throat covering the jugulum and blending with the streaks of the breast. Wing-formula, 3, 2, 4, 1, 5; wing, 2.45; tail, 2.05; bill, .27; tarsus, .64. *Hab.* Isthmus of Panama.

var. *rufigula*.⁶

¹ *Dendroica petechia*, BAIRD, Review, 199. (*Motacilla petechia*, LINN. 1766.)

A specimen from Port au Prince is smaller, measuring, wing, 2.50; tail, 2.10; bill, .31; tarsus, .74. It is perhaps lighter green above than Jamaican specimens. These features may only be characteristic of the particular individual.

² *D. ruficapilla*, BAIRD, Rev. 201.

A single specimen from Porto Rico differs in some respects from the average of a series from the other islands named. The chief differences are, less thickly streaked throat, and distinct shaft-streaks of dark chestnut on the back. However, one or two specimens of true *ruficapilla* from St. Thomas have the upper part of the throat streaked, and one of them has the streaks on the back. In all probability other specimens from Porto Rico would be more like typical species of this race as seen in the majority of those from St. Thomas and St. Bartholomew.

³ *D. aureola*, BAIRD, Rev. 194. (*Sylvicola a.* GORDON, Voyage Beagle, 1841, 86.)

⁴ *D. capitalis*, LAWRE. Pr. Phila. Acad. 1868, 359. Barbadoes. *Dendroica*, BAIRD, Rev. 201.

⁵ *D. vieillotii*, CASSIN, Pr. A. N. S. May, 1860, 192. (Panama, Carthagen.) — BAIRD, Rev. 203.

⁶ *D. rufigula*, BAIRD, Rev. p. 204. The habitat as Martinique, W. I., was there queried, but without any reason for so doing other than that this was the locality of Vieillot's species, with which the type described in Review nearly agreed. Should Vieillot's species be really from Martinique, in all probability the present bird will be found to be different, and therefore not entitled to the name here given. Provided such is the case, the name "*ruficeps*," Cabanis, cannot with

Breast and sides with only very narrow or scarcely appreciable streaks of rufous; outer webs of wing-coverts, etc., scarcely different from general surface.

Rufous of the head confined to it, and abruptly defined all round. Wing-formula, 3, 2 = 4, 1, 5; wing, 2.50; tail, 2.25; bill, .31; tarsus, .72. *Hab.* Mexico (from Honduras and Yucatan to Mazatlan) var. *bryanti*.¹

Series II.

Prevailing color yellow; crown, rump, and crissum with spots of rufous; a band of the same on the side of the head, from bill (meeting both on forehead and on chin) around eye and over ear-coverts.

6. *D. eoa*.² *Hab.* Jamaica (Gosse).

Group B.

Base of primaries with white patch.

Two white bands on wing *Series I.*

No white bands on wing *Series II.*

Base of primaries without white patch.

Rump yellow.

Crown with a yellow spot *Series III.*

Crown without a yellow spot *Series IV.*

Rump not yellow.

Throat white (with black streaks in *striata* and *pharetta*) *Series V.*

Throat yellow or orange *Series VI.*

Throat black, or mixed with black *Series VII.*

Series I.

7. *D. olivacea*. ♂. Head and neck, all round, fine light orange-rufous; a broad black "spectacle" along side of the head. ♀. Head yellowish, dusky on top; spectacle obsolete. *Hab.* Whole of Eastern Mexico; Guatemala.

Series II.

8. *D. caerulea*. ♂. Head dark blue above and black underneath; a black patch covering whole lateral and under side of head and lateral lower parts. Rest of upper parts dark blue; bases of primaries and abdomen pure white. ♀. Above olive, with a light superciliary stripe; beneath wholly light greenish-buff; base of primaries white. *Hab.* Eastern Province of United States; in winter south into Cuba, Jamaica, and St. Domingo.

propriety be used, as under that head he includes specimens from Carthagen (true *vicilloti*), Costa Rica, and Mexico (the latter *bryanti*).

¹ *D. vicilloti*, var. *bryanti*, RIDGWAY.

² *Sylvicola eoa*, Gosse, Birds of Jamaica, 1847, 158; Illustrations Birds Jam. *Dendroica eoa*, BAIRD, Rev. 195. The true position of this species is very uncertain, owing to the imperfect description, or rather the incomplete plumage, of the types. There is no doubt, however, that it is entirely different from any other, and in its having, as expressly stated, the inner webs yellow, thus bringing it into close relation with the "Golden Warblers."

Series III.

9. *D. coronata*. A yellow patch on each side of the breast; above ashy streaked with black; belly white. ♂. Breast more or less black; upper parts ash with a bluish tinge. ♀. Breast only streaked with black; ash of upper part grayish or brownish.

Throat white; a white superciliary streak; two white bands on wing. *Hab.* Eastern Province of North America, north to Alaska and Greenland; in winter south to Panama and West Indies (resident in Jamaica!) var. *coronata*.

Throat yellow; no white superciliary streak; one white patch formed by the fusion of the two bands on the wing. *Hab.* Western Province of North America from British Columbia, south to Cape St. Lucas and Jalisco, Western Mexico; east to Rocky Mountains.

var. *auduboni*.

Series IV.

10. *D. maculosa*. Whole lower parts bright yellow; black streaks across breast and along sides; crown ash; lores, auriculars, and back black. ♀ scarcely different. *Hab.* Eastern Province of North America, from Fort Simpson to Panama; Cuba and Bahamas.

Series V.

A. Above ashy-blue, or soft bluish-green.

11. *D. cærulea*. Lower parts pure white or greenish-white; with or without a narrow band across the breast; above fine ashy-blue, or soft bluish-green; if blue (♂), the back and crown streaked with black; if green (♀ and *juv.*), these streaks obsolete. *Hab.* Eastern Province of United States (rare northward except in Mississippi Valley), south to Bogota in winter; Cuba.

B. Above not ashy-blue nor bluish-green, but streaked with black upon an ashy greenish-olive or yellowish ground, or else bright olive-green.

a. Sides more or less rufous, and without black or dusky streaks on under surfaces.

12. *D. pennsylvanica*. ♂. Crown pure yellow; throat and auriculars pure white; ♀ *ad.* similar, but crown greenish, and more or less streaked. *Juv.* Above bright olive-green, nearly grass-green, *without streaks* except on the back; side of head, and sides, clear ashy, the latter with or without a trace of chestnut; eyelids and medial lower parts pure white. *Hab.* Eastern Province of United States, south to Panama; Bahamas.

13. *D. castanea*. ♂. Crown reddish-chestnut; throat and sides rufous; auriculars black. ♀ similar, but crown thickly streaked, sometimes without a trace of rufous; jugulum and throat only tinged with rufous. *Juv.* Above greenish-olive, streaks obsolete; beneath, *including lower tail-coverts*, pale greenish-buff, or whitish-buff, and without any trace of streaks on the sides (distinction from ♀ of *D. striata*) the sides usually with a tinge of chestnut. *Hab.* Eastern Province of North America, from Hudson's Bay Territory to New Granada.

b. Sides without any rufous, and with black or dusky streaks.

Medial lower parts not streaked; inner webs of tail-feathers with broad patch of white.

14. *D. striata*. ♂. Crown deep black; auriculars and lower parts white; throat with two series of black streaks, converging and forming an angle on the chin. Above ashy streaked with black. ♀ similar,

but crown greenish streaked with black; lower parts tinged with greenish. *Juv.* Above greenish-olive, the streaks obsolete; beneath pale greenish-yellow; *the lower tail-coverts pure white.* *Hab.* Eastern Province of North America, north to Greenland and Kodiak, south to Bogota, Cuba, and Bahamas.

Medial lower parts streaked with black; inner webs of tail-feathers merely edged with white.

15. **D. pharetra**.¹ ♂. Above grayish-white, with broad streaks of black; posteriorly, plain brownish-gray; lower parts with cuneate spots of black. *Hab.* Jamaica.

Series VI.

A. A black "mask" around the eye and on auriculars, and extending down the side of the throat; a light superciliary stripe continued back into a large space, of similar color, on side of neck.

16. **D. blackburniæ**. Crown with an orange or yellowish spot (exposed or concealed); superciliary stripe, side of neck and throat, intense orange-red (♂ ad.), or varying from this to pale buff (*Juv.*). ♂ intense black above; back streaked with white or yellowish. ♀ olive-gray above, streaked with black. *Juv.* olive-gray above without distinct streaks. *Hab.* Eastern Province of United States, south to Ecuador; Bahamas.

17. **D. dominica**. Crown without an orange or yellowish spot; superciliary stripe and side of neck pure white; throat gamboge-yellow; above ash, without streaks.

Superciliary stripe bright yellow anterior to the eye. Bill, .45; tarsus, .60; wing, 2.60; tail, 2.00. *Hab.* Atlantic United States and West Indies var. *dominica*.

Superciliary stripe pure white anterior to the eye. Bill, .35; tarsus, .60; wing, 2.70; tail, 2.20. *Hab.* Mississippi region of United States; Mexico (Yucatan on east coast, and Colima on west coast); Guatemala and Honduras var. *albitorus*.

B. No black "mask." Superciliary stripe scarcely reaching behind the eye. Sides of neck ashy like the back.

18. **D. graciae**. Auriculars, neck, crown, and upper parts generally, ashy; a supra-loral stripe, a crescent on the lower eyelid, and the anterior lower parts gamboge-yellow. Crissum white.

Back and sides streaked with black; abdomen white.

Yellow of throat terminating abruptly at the jugulum; supra-loral stripe extending about .20 of an inch past the eye, this portion of it white; dorsal streaks broad. Wing, 2.60; tail, 2.20. *Hab.* Arizona (Fort Whipple) var. *graciae*.

Yellow of throat covering whole jugulum, and not ending abruptly; supra-loral stripe scarcely passing the eye, and wholly yellow; dorsal streaks narrow. Wing, 2.20; tail, 1.95. *Hab.* British Honduras (Belize) var. *decorata*.

Back and sides not streaked with black; abdomen yellow.

Yellow of throat extending back to the crissum; supra-loral stripe as in the last; dorsal streaks wanting. Wing, 2.10; tail, 1.95. *Hab.* Porto Rico var. *adelaidæ*.²

¹ *D. pharetra*, BAIRD, Rev. 192. (*Sylvicola pharetra*, GOSSE, Birds Jam. 1847, 163.)

² *D. adelaidæ*, BAIRD, Rev. April, 1865, 212.

Series VII.

Throat black in ♂, mixed with black in ♀.

A. Sides streaked; black of throat with its posterior outline concave.

a. Side of head white and black.

19. **D. nigrescens.** A small yellow spot over the lore; above ash; beneath white. ♂. Whole crown, uniform glossy black; back streaked with black. ♀. Crown ash streaked with black; throat mixed with white anteriorly. *Juv.* Crown and cheeks ashy; throat mostly white; back without streaks. *Hab.* Western and Middle Province of United States, south, in winter, into Western Mexico (Oaxaca).

b. Side of head yellow and black, or yellow and olive.

Black of throat covering jugulum; a hidden yellow spot in middle of forehead.

20. **D. chrysopareia.** Black above, pure white below: no tinge of yellow behind the black jugular patch. *Hab.* Eastern Middle America, from Guatemala to Texas (San Antonio).

21. **D. virens.** Olive-green above, the crown and back without streaks; beneath white, the breast and anal region tinged with black. *Hab.* Eastern Province of North America, from Greenland to Panama; Cuba; Oaxaca; Heligoland, Europe!

Black of throat confined anteriorly to the jugulum; no yellow spot on forehead.

22. **D. townsendi.** Above olive-green, the crown and back with conspicuous black streaks; beneath yellow anteriorly, and white posteriorly. ♀, black of throat mixed with yellow; *juv.*, no black on throat, and streaks on back obsolete. *Hab.* North and Middle Province of United States, south, in winter, into Guatemala.

B. Sides not streaked; black of throat with its posterior outline convex.

23. **D. occidentalis.** Above ash tinged with olive; beneath white. Head nearly all yellow. ♂. Top of head yellow with a few small black spots; nape black; back streaked with black; sides pure white. (♀ not seen.) *Juv.* Yellow of crown overlaid by olive; above greenish-plumbeous, without any black on nape or back; throat yellowish-whitish; sides tinged with ashy. *Hab.* Western and Middle Province of United States, south to Guatemala.

Group C.

A. Above ash; no supra-loral stripe; eyelids not yellow.

24. **D. kirtlandi.** Above, including side of head and neck, bluish-ash; crown and back streaked with black; beneath (except crissum) pale yellow; breast speckled, and sides streaked with black; lores and orbital region, black; eyelids white. *Hab.* Eastern Province of United States (Cleveland, Ohio), and Bahamas.

25. **D. pityophila.**¹ Above, including side of head and neck, dull ash; the forehead and crown olive-green; crown and back not streaked; beneath white; the throat and jugulum yellow; sides ashy; no specks on breast, nor streaks on sides, but a few along side of neck, between the ash and yellow. *Hab.* Cuba.

B. Olive-green or brown above; a supra-loral stripe of yellow; eyelids yellow.

a Above olive-green, without streaks; crissum white; sides of breast with obsolete grayish streaks.

¹ *D. pityophila*, BAIRD, Rev. 208. (*Sylvicola* p. GUNDEL, Ann. N. Y. Lyc. Oct. 1855, 169.

26. *D. pinus*. Forehead and ear-coverts olive; abdomen white; yellow supra-loral stripe not continued behind the eye. ♀ more grayish; *juv.* above umber, beneath light grayish-brown, tinged with yellow. *Hab.* Eastern Province of United States; Bahamas.

? 27. *D. montana*. Forehead and ear-coverts yellow; abdomen yellow; yellow supra-loral stripe continued past the eye into the yellow of the auriculars. (♀ and other stages unknown.) *Hab.* "Blue Mountains of Virginia."

b. Above olive-green, the back streaked with chestnut; crissum yellow; streaks of black on sides.

28. *D. discolor*. Bright gamboge-yellow beneath; streak on lores and along side of neck, as well as along sides and flanks, deep black; dorsal feathers chestnut medially. ♀ duller, but similar; *juv.* not seen. *Hab.* Eastern Province of United States; in winter, throughout West Indies.

c. Above olive-brown, the back not streaked; crissum gamboge-yellow; streaks of reddish-chestnut on sides.

29. *D. palmarum*. *Ad.* Forehead and crown deep rufous; superciliary stripe bright yellow, continued back over auriculars; sexes alike. *Juv.* and *ad.* in winter. Crown brownish, streaked with dusky; streaks on sides more dusky. *Hab.* Eastern Province of North America, north to Fort Simpson and Hudson's Bay; Bahamas; Cuba, St. Domingo, and Jamaica, in winter.

Dendroica æstiva, BAIRD.

YELLOW WARBLER; SUMMER YELLOW-BIRD.

Metacilla æstiva, Gm. Syst. Nat. 1, 1788, 996. — *Sylvia æstiva*, LATH. : VIEILL. II, pl. xcv. — AUD. Orn. Biog. 1, pl. xxxv, 93. — *Sylvicola æst.* SWAINS. — AUD. Birds. Am. II, pl. lxxxviii. — *Rhinanaphus æst.* BON. : CAB. Jour. III, 472 (Cuba). — *Dendroica æst.* BAIRD, Birds N. Am. 1858, 282; Rev. 195. — SCLATER, Catal. 1861, 32, no. 194 (Ecuador, Cayenne, N. Granada). — TAYLOR, Ibis, 1864, 81 (Trinidad). — COOPER & SUCKLEY, P. R. R. XII, II, 1859, 181 (N. W. coast). — SAMUELS, 237. — DALL & BASSISTER, (Alaska). — COOPER, Orn. Cal. I, 1870, 87. — *Sylvia carolinensis*, LATH. Ind. Orn. II, 1790, 551. — *Sylvia flava*, VIEILL. II, 1807, 31, pl. lxxxi. — *Sylvia citreola*, WILS. II, pl. xv, fig. 5. — *Sylvia childreni*, AUD. Orn. Biog. 1, 1831, pl. xxxv (young). — *Sylvia catharina*, AUD. Orn. Biog. 1, 1831, pl. lxxv. — *Sylvicola r.* AUD. Birds Am. II, pl. lxxxix. — *Metacilla rubiginosa*, PALLAS, Zoog. Rosso-Asiat. I, 1831, 496 (Kodiak). — *Rhinanaphus chrysæolus*, BON. Bull. Soc. Linn. Caen, II, 1851, 32 (*D. æstiva*, from South America; Cayenne).

Other localities: *Xalapa*, SCLATER, P. Z. S. 1859, 363. — *Guatemala*, SCLATER & SALVIN, Ibis, 1859, page 11. — *Panama*, winter, LAWRE. ANN. N. Y. Lyc. 1861, 322. — *Turbo*, N. Granada, CASS. Pr. A. N. Sc. 1860, 191. — *Bogotá*, SCLATER, Pr. 1855, 143. — *City of Mexico*, Ib. 1864, 172.

SE. CHAR. Bill lead-color. Head all round, and under parts generally, bright yellow; rest of upper parts yellow-olivaceous, brightest on the rump. Back with obsolete streaks of dusky reddish-brown. Fore breast and sides of the body streaked with brownish-red. Tail-feathers bright yellow; the outer webs and tips, with the whole upper surfaces of the innermost one, brown; extreme outer edges of wing and tail-feathers olivaceous like the back; the middle and greater coverts and tertials edged with yellow, forming two bands on the wings. *Female* similar, with the crown olivaceous like the back, and the streaks

wanting on the back, and much restricted on the under parts. Tail with more brown. Length of male, 5.25; wing, 2.66; tail, 2.25. (No. 940.) *Young*. Dull brownish-olive above; pale ochraceous-yellow beneath, with the throat more whitish; the yellow of tail restricted to inner half of inner webs. The latter feature will serve to distinguish it from any other North American species.

HAB. Entire North America, and in winter into South America as far as Ecuador, Cayenne, and Trinidad. Not recorded from West Indies, where replaced by allied species.

In the great abundance of this species and its wide range of distribution, there are many variations in size and color, though none that are not readily understood. In young birds the yellow of the tail-feathers is more restricted, sometimes confined to the edge of the inner webs. In adults there is occasionally a tinge of orange in the forehead.

Sylvia rathbonia of Audubon is described with even tail, and the tail-feathers brown, edged externally with yellow; the reverse of *astiva*. It is generally, however, considered a synonyme.

Birds of this type ("Golden Warblers") of six or eight additional species are known to occur in the West Indies, the Galapagos, and in Middle America; one of them, *D. bryanti*, possibly to be met with in Southern Arizona. (See Baird, Review Am. Birds, 193.)

After comparing a series of about one hundred and twenty North and Central American specimens (the latter being winter visitors to the region where obtained), nothing really characteristic of any particular region can be detected. Specimens from the Pacific coast of the United States are perfectly identical in colors with those from the Atlantic States; and they agree in size and proportions, except of the bill, which is appreciably longer and broader in the Eastern than in the Western birds. The most highly colored examples are from the interior regions, along the Mississippi Valley from Louisiana to Northern Illinois, and over the plains north to Fort Simpson. The majority of the specimens from this region are just appreciably different from others, in having the yellow more intense and prevalent, almost subduing the olive shades above; the crown more tinged with orange. Sometimes (as in No. 4,301, Calcasieu Pass, La.) the rump and upper tail-coverts are absolutely *pure* yellow, only a medial stripe on the feathers being olivaceous like the back. The orange-rufous tinge on the crown is deepest in Nos. 4,665, Fort Lookout, and 4,300, Calcasieu Pass.

Three adult summer males from Alaska (Nos. 54,429, Kodiak; 54,425, Yukon River; and 27,267, Fort Yukon), as well as one from Maine (52,378, Calais), differ from others in having the olive pervading the whole surface above, even to the bill, the forehead being only tinged with yellow, and the edges of wing-coverts merely inclining to this color. The lower parts are much as in Southern specimens, though the yellow is less intense.

Females from Arizona (as 49,712, Camp Grant, May; 40,664, Fort Whipple, May; and 34,340, Los Pinos, New Mexico, June) differ from others in very bleached plumage, the lower parts being almost white, and the upper

surface quite ashy. But this is, in fact, an actual bleaching, frequently to be seen in birds from that region.

HABITS. The geographical range of the common Summer Yellow-Bird is very nearly coextensive with North America. In its northern distribution it is found as far toward the arctic shores as any of our land birds. Richardson speaks of it as well known throughout the fur countries as far as the woods extend, and mentions meeting with it among the earliest arrivals in spring, coming in company with the equally well-known Robin and the Grackle. At Fort Franklin, latitude 66°, he saw it the 15th of May, about the time of its first appearance in New England. This was supposed to be the limit of its northern range, but more recent observations give abundant evidence of its presence, in considerable numbers, to the very shores of the Arctic Ocean. The late Mr. Hepburn, in manuscript notes, states it to be a common summer visitant both of California and Vancouver's Island, and that along the coast he has traced it as far north as the frontier line of 54° 40', where it arrives at the beginning of May, but does not nest until the end of the month.

Mr. Dall, in his notes on the birds of Alaska, states that this Warbler is a rather common bird all through that territory, and gives its arrival as about the 10th of May.

Its extreme southern limit is not so distinctly traced, but is at least as far as the northern portions of South America, inclusive of Cayenne and Ecuador. In all of the West Indies except Trinidad it is replaced by several closely allied species or local races. In Trinidad, Mr. E. C. Taylor states that he found this species common, and could perceive no difference from North American specimens. In Guatemala it is abundant in the winter.

Dr. Coues found this Warbler abundant in Arizona, where it is a summer resident, from April 25 to the middle of September. There, as elsewhere, its preference for watercourses was noticed. Wherever found, it is always most abundant in alluvial meadows, and more rare in other localities.

Dr. Samuel Cabot found this Warbler common in Central America, and Dr. Cragin, of Surinam, sent the Boston Society several specimens from Guiana. Dr. Woodhouse found it abundant in Texas and New Mexico, as did Drs. Suckley and Cooper in Washington Territory and California. It breeds over the whole area of North America, from Georgia on the southeast and from Mexico, northward. Dr. Sumichrast found it, only as a migratory bird, abundant on the plains of Mexico.

The notes of Mr. Kennicott and the memoranda of Messrs. McFarlane, Ross, and Lockhart attest the extreme abundance of this species in the farthest Arctic regions. In nearly every instance the nests were placed in willows from two to five feet from the ground, and near water. In one instance Mr. Ross found the eggs of this species in the nest of *Turdus swainsoni*, which had either been deserted or the parent killed, as the eggs were in it, and would probably have been hatched by the Warbler with her own.

Dr. Cooper found this Warbler very abundant in Washington Territory, and noticed their arrival in large numbers at the Straits of Fuca as early as April 8.

The Summer Yellow-Bird arrives in New England with great uniformity from the first to the middle of May. Its coming is usually the harbinger of the opening summer and expanding leaves. Unlike most of its family, it is confiding and familiar, easily encouraged, by attention to its wants, to cultivate the society of man. It confidingly builds its nest in gardens, often in close vicinity to dwellings, and in the midst of large villages and cities, among the shrubbery of frequented parks. This Warbler, soon after its arrival, begins the construction of its nest. It is usually placed in low bushes, three or four feet from the ground. Occasionally very different positions are chosen. Hedges of buckthorn and hawthorn, barberry-bushes, and other low shrubs, are their favorite places of resort. On one occasion the nest was placed some forty feet from the ground, in the top of a horse-chestnut tree overhanging the main street of a village. Such high positions are, however, not very common.

The nest is invariably fastened to several twigs with great firmness, and with a remarkable neatness and skill. A great variety of materials is employed in the construction of their nests, though not often in the same nest, which is usually quite homogeneous. The more common materials are the hempen fibres of plants, fibrous strips of bark, slender stems of plants and leaves, and down of asclepias. Interwoven with these, forming the inner materials, are the down from willow catkins, the woolly furze from fern-stalks and the *Eriophorum virginicum*, and similar substances. These are lined with soft, fine grasses, hair, feathers, and other warm materials. Cotton, where procurable, is a favorite material; as also is wool, where abundant. I have known instances where nests were built almost exclusively of one or the other material. A pair of these birds, in 1836, built their nest under a parlor window in Roxbury, where all their operations could be closely watched. When discovered, only the framework, the fastening to the supporting twigs, had been erected. The work of completion was simple and rapid. The female was the chief builder, taking her position in the centre of the nest and arranging the materials in their places as her mate brought them to her. Occasionally, with outstretched wings and expanded tail, she would whirl herself round, giving to the soft and yielding materials their hemispherical form. At intervals she arrested her revolutions to stop and regulate with her bill some unyielding portion. When her mate was dilatory, she made brief excursions and collected material for herself, and when the materials brought her were deemed unsuitable, they were rejected in a most summary and amusing manner. The important part of the tail-feathers in shaping the nest and placing the materials in position was a striking feature in this interesting performance. The greater portion of the nest was thus constructed in a single day.

The wonderful sagacity displayed by this Warbler in avoiding the disagreeable alternative of either having to abandon its own nest or of rearing the young of the intrusive Cow Blackbird, when one of these eggs is dropped in her nest, was first noticed by Mr. Nuttall. The egg of the parasite, being too large for ejection, is ingeniously incarcerated in the bottom of the nest, and a new lining built over it. Occasionally, either by accident or design, the intrusive egg has been fractured. Mr. Nuttall states that where the parasitic egg is laid after her own, the Summer Yellow-Bird acts faithfully the part of a foster-parent. This, however, is not according to my observations. In several instances I have known the Summer Yellow-Bird utterly refuse to act the part of a foster-parent, and, rather than do so, sacrifice her own eggs. So far as I know, this Warbler will never sit upon or hatch out the egg of the Cowbird, under any circumstances. Some powerful instinct, bordering closely upon reason, seems to teach these intelligent Warblers the character of the intruder, and they sacrifice their own eggs rather than rear the parasite. In this dilemma they will always, so far as I know, incarcerate their own eggs with the Cowbird's and reconstruct the nest above them. In one instance the same pair of Yellow-Birds twice, in the same nest, covered up alien eggs in this manner, building, in fact, three nests one above the other, between the walls of which had been successively included two eggs of the Cowbird. This three-storied nest measured seven inches in length, and was built almost exclusively of raw cotton. The covering of the imprisoned eggs was about two thirds of an inch thick. In both instances the Cowbird's eggs had been broken, apparently by design.

So far as I am aware this Warbler raises but one brood in Massachusetts in a season. In Pennsylvania it is said to raise two, and even three. The eggs are usually five and occasionally six in number.

This Warbler is conspicuous in its devotion to its young, evincing a strong attachment and an anxiety in regard even to an unoccupied nest, and betraying the site by this solicitude. They will also resort to various expedients to draw one away from their nest, by feigned lameness and other stratagems and manoeuvres.

The song of the Summer Yellow-Bird is simple but pleasing, and is easily recognized when once known, though liable to be confounded with that of the Maryland Yellow-Throat, and also said to resemble the song of several other Warblers.

In confinement they usually become very tame, confiding, and reconciled to their imprisonment, and have been known to perch on an outstretched finger, and to catch flies in a room.

Their eggs vary in length from .61 to .70 of an inch, and in breadth from .49 to .52. They have a ground-color of a light green. Their dots and blotches vary greatly in number, size, and manner of distribution. Their colors are light purple, darker purplish-brown, and other shades of brown and lilac.

Dendroica coronata, GRAY.**YELLOW-RUMP WARBLER; MYRTLE WARBLER.**

Motacilla coronata, LINN. Syst. Nat. I, 1766, 333. *Sylvia coronata*, LATH.; VIEILL. ; WILS. ; NUTT. ; AUD. Orn. Biog. II, pl. cliii. *Sylvicola coronata*, SWAINS. ; BON. ; AUD. Birds, Am. II, pl. lxxvi. — JONES, Nat. Bermuda, 59 (abundant in April). *Dendroica coronata*, GRAY, Genera, 1842, 2. — BAIRD, Birds N. Am. 1858, 272; Rev. 187. — MARCH, P. A. N. Sc. 1863, 292 (Jamaica, in summer; breeding). — GUNDEL, Cab. Jour. 1861, 326 (Cuba; common). — COOPER & SICKLEY, P. R. R. XII, II, 1859, 180 (Puget Sound). — SAMUELS, 226. — DALL & BANNISTER (Alaska). — COOPER, Orn. Cal. I, 1870, 89. *Rhinanthus cor.* CAB. Jour. 1855, 473 (Cuba). *Motacilla canadensis*, LINN. 12th ed. 1766, 334 (*Ficedula canadensis cinerea*, Br. III, 524, pl. xxvii, fig. 1). *Parus virginianus*, LINN. 12th ed. Syst. Nat. I, 1766, 342. *Motacilla umbra*, *cincta*, *pinguis*, GM. *Sylvia xanthopygia*, VIEILL. *Sylvia xanthorosa*, VIEILL.

Localities quoted: *S. Greenland*, REINHARDT, Ibis, 1861, 5. *Cordova*, SCL. P. Z. S. 1856, 291. *Xalapa*, IB. 1859, 363. *Guatemala*, SCL. & SALV. 1859, 11. *Panama*, LAWR. ANN. N. Y. Lyc. VIII, 63. *Cuba*, winter, CAB. Jour. III, 473. *Bahamas*, winter, BRYANT, Bost. Pr. VII, 1859. *Jamaica*, GOSSE, Birds Jam. 155. *St. Domingo*, SALLÉ, P. Z. S. 1857, 231. *Costa Rica*, LAWR. *Orizaba*, winter, SUMICHRAST.

SP. CHAR. Above bluish-ash, streaked with black. Under parts white. The forepart of breast and the sides black, the feathers mostly edged narrowly with white. Crown, rump, and sides of breast yellow. Cheeks and lores black. The eyelids and a superciliary stripe, two bands on the wing and spots on the outer three tail-feathers, white. *Female* of duller plumage and browner above. Length, 5.65; wing, 3.00; tail, 2.50.

HAB. Eastern Province of North America, and northward, extending sparsely along United States boundary to Pacific Ocean; Denver City, Colorado; Fort Yukon; Greenland; Eastern Mexico to Panama R. R.; Western West Indies and Bermuda. Breeds in Jamaica!

Autumnal and winter birds are very much duller and more obscurely colored, the upper parts of an umber cast with the streaks almost obsolete; the black of the breast wanting or but just indicated, and the yellow patches on crown almost concealed by the brown tips to the feathers, and those on side of breast quite dull.

A spring male (52,283) from Washington is remarkable in having the adjoining series of feathers down the middle of the back with their inner webs broadly edged with yellow. In this respect it differs from all others that we have noticed.

HABITS. The Yellow-crowned Wood Warbler is one of the most common species of this genus, as well as one of the most widely distributed. It is found, at different seasons, throughout the eastern part of the continent, as far west as the Great Plains, extending at the far north to the Pacific Ocean. It has been found in Greenland, three specimens having been taken within twenty years, and on the shores of the Arctic Ocean, and during the winter in the West India Islands, Mexico, and Central America. Specimens from Florida and Fort Steilacoom, Panama, Guatemala, and Jamaica, and from Fort Rae, Anderson River, and the Yukon, in the collection of the Smithsonian Institution, attest its wide distribution. In Jamaica, in the neighborhood of

Spanishtown, this species has been known to breed. In view of the fact that this bird is regarded, with good reason, as one of our most northern species, breeding to the very shores of the frozen seas, the occurrence seems erratic and remarkable. Yet it is not without corresponding vagaries in other species, the *carolinensis* breeding in Cuba and the *tigrina* in St. Domingo and Jamaica.

Mr. Paine, of East Randolph, Vt., states that these Warblers arrive in his vicinity about the first of May, and remain there nearly two weeks, and then all pass north. They do not return on their southern flight until the last of September, when they remain about three weeks. It is a very active, restless bird, chirping continually and very sharply as it flies around in search of insects, but has not, so far as he knows, any song.

In Southern Illinois, as Mr. Ridgway informs me, this bird is a common winter sojourner, remaining late in spring with the migratory species. It is very abundant throughout the winter in woods, orchards, and door-yards.

Mr. Salvin found this species frequenting the more open districts about Duenas, Guatemala, apparently preferring scattered bushes to the denser underwood, and was an abundant species there throughout the winter season.

It is but quite recently that we have known with certainty its place and manner of breeding. Neither Wilson, Nuttall, nor Audubon appear to have met with its nest, though the latter received one from Professor McCulloch of Halifax.

In the summer of 1855, early in July, I obtained a nest of this species in Parsboro', Nova Scotia. It was built in a low bush, in the midst of a small village, and contained six eggs. The parents were very shy, and it was with great difficulty that one of them was secured for identification. Though late in the season, incubation had but just commenced.

The nest was built on a horizontal branch, the smaller twigs of which were so interlaced as to admit of its being built upon them, though their extremities were interwoven into its rim. The nest was small for the bird, being only two inches in depth and four and a half in diameter. The cavity is one and a half inches deep and two and a half wide. Its base and external portions consist of fine, light, dry stalks of wild grasses, and slender twigs and roots. Of the last the firm, strong rim of the nest is exclusively woven. Within, the nest is composed of soft, fine grasses, downy feathers, and the fine hair of the smaller mammals.

Mr. Audubon, who observed very closely the habits of these birds during a winter in Florida, describes them as very social among themselves, skipping along the piazza, balancing themselves in the air opposite the sides of the house in search of spiders and insects, diving through the low bushes of the garden after larvæ and worms, and at night roosting among the orange-trees. In his visit to Maine he found them very abundant in early May. The woods seemed alive with them, and wherever he landed, on his way to Labrador, he found them in great numbers.

This Warbler is an expert flycatcher, feeds chiefly on insects, and is a great devourer of small caterpillars; but in the winter its food is largely composed of berries, especially those of the *Myrica cerifera*. It will also feed on grass-seeds. In the warmer wintry days in Florida, when insects are abundant, Mr. Audubon states that these birds are particularly active in their pursuit, and the trees seem full of them. At this time they emit, at each movement, a single note, *twēēt*, so very peculiar that they may be at once recognized by the cry.

Wilson states that these Warblers appear in Pennsylvania, from the North, early in October, and stay there several weeks. Some of them remain in the Southern States all winter. They feed with great avidity upon the berries of the red cedar.

In Western Massachusetts it is a very abundant spring and autumn visitant, making but a brief stay in spring, but passing northward in large numbers. In autumn it remains longer, and passes south more leisurely. Mr. B. P. Mann found its nest and eggs in Concord, but this was probably an exceptional instance. In Eastern Maine it arrives May 25, and, as Mr. Boardman thinks, remains to breed. Both Dr. Suckley and Dr. Cooper met with this species in Washington Territory, where it is very rare.

No writers have observed or noted the song of this bird, except Mr. T. M. Trippe (*American Nat.*, II. p. 171), who states that during its spring migrations it has a very sweet song or warble, uttered at short intervals.

It reaches the high northern latitudes late in May, and leaves that region in September. The observations of Mr. McFarlane show that the nests of this bird are moderately common at Anderson River, and are generally built in low spruce-trees four or five feet from the ground. In one or two instances it was placed on the ground.

The eggs of this Warbler vary from .72 to .80 of an inch in length, and from .50 to .55 in breadth. Their ground-color is white, often tinged with a bluish shade, and blotched and spotted with reddish-brown, purple, and darker shades of brown. They are of a rounded oval shape.

***Dendroica auduboni*, BAIRD.**

AUDUBON'S WARBLER; WESTERN YELLOW-RUMP.

Sylvia auduboni, TOWNSEND, J. A. N. Sc. VII, II, 1837. — *IB.* Narrative, 1839, 342. — AUD. ORN. BIOG. V, 1839, 52, pl. ccxcv. *Sylvicola auduboni*, BON. List. 1838. — AUD. Birds Am. II, 1841, 26, pl. lxxvii. *Dendroica auduboni*, BAIRD, Birds N. Am. 1858, 273; Rev. 188. — SCLATER, P. Z. S. 1858, 298 (Oaxaca; October); 1860, 250 (Orizaba). — SCLATER & SALVIN, *Ibis*, 1860, 273 (San Geronimo, Guat.). — COOPER & SUCKLEY, P. R. R. Rep. XII, II, 1859, 181. — SCLATER, P. Z. S. 1864, 172 (City of Mexico). — COOPER, ORN. CAL. I, 1870, 88.

SP. CHAR. Above bluish-ash, streaked with black, most marked on the middle of the back; on the head and neck bluish-ash. Middle of crown, rump, chin, and throat, and a

patch on the side of the breast, gamboge-yellow; space beneath and anterior to the eyes, forepart of breast and sides, black; this color extending behind on the sides in streaks. Middle of belly, undertail-coverts, a portion of upper and lower eyelids, and a broad band on the wings, with a spot on each of the four or five exterior tail-feathers, white; rest of tail-feathers black. *Female* brown above; the other markings less conspicuous and less black. Length, 5.25; wings, 3.20; tail, 2.25. *Young*, first plumage, whole body, including head all round and rump, conspicuously streaked with slaty-black upon an ashy ground above and white below. No yellow on crown, rump, breast, or throat. Wings and tail as in autumnal adult.

HAB. Western and Middle Provinces of the United States; Cape St. Lucas; Western Mexico and Orizaba? Oaxaca (cold regions, October, *SCLETED*); Guatemala (*SALVIS*).

This bird is very closely allied to *D. coronata*, but is distinguished by the yellow (not white) throat; the absence of a superciliary white stripe (the eyelids white, however; the restriction of the black of the face to the lores, and to a suffusion round the eye; and the presence of one broad band on the wings, instead of two narrow ones.

HABITS. This beautiful Warbler, so strikingly simulating the *D. coronata* in the character of its markings, and now so well known as a common species on the Pacific coast, was first met with by Mr. Townsend near the Columbia River, where he found it very abundant. His account of its habits is inconsistent, and probably not reliable. Mr. Nuttall, who was with Mr. Townsend, differs, also, essentially in his account. He states that he first saw them about the middle of April, and that their song bore a very close resemblance to that of the *D. astiva*, but was delivered in a much superior style. They remained his summer companions, breeding among the shady firs on the borders of prairie openings, where there was an abundant supply of insect food. By the 8th of June he found their young already out, in small and busy flocks, solicitously attended by their parents. They greatly resembled the young of the *coronata*. These birds frequented large trees, particularly the water-oaks, and the lower branches of gigantic firs.

Dr. Cooper found this Warbler one of the most abundant species of Washington Territory, and believed them to be, to some extent, a resident species, as he met them about the Straits of Fuca in March. He speaks of its song as lively, and heard everywhere on the borders of the woods, even near the coast, where few of the smaller species ever visit. In the fall he noticed straggling flocks of the young wandering about the low shrubbery in large numbers. The same writer also states that this species is in winter a very abundant bird in the southern part of California, flitting about among the bushes and low trees. The males are then in the dull plumage of the females, and do not put on their richer hues until March or April. He saw none south of San Francisco after May 1, but they began to reappear in September. As he found newly fledged young near Lake Tahoe, he thinks they breed throughout the higher Sierra Nevada. At the sea level in latitude 37° they appear late in September, and remain until March 20.

Dr. Suckley regarded this bird as the most abundant species visiting the

western portion of Washington Territory. Near Fort Steilacoom it was found principally among the oak-trees on the plains.

Dr. Woodhouse found it abundant in New Mexico, confining itself to the timbered and mountainous districts, and especially plentiful among the San Francisco Mountains, feeding among the tall pines. Dr. Coues found it exceedingly common in Arizona, where some spend the winter, and a few possibly remain in the summer to breed.

Dr. Heermann found them remaining in the Sacramento Valley throughout the winter, and quotes Dr. Kennerly as finding these birds on the Boca Grande and at different points in Sonora. Mr. Gambel found these Warblers on all his route from New Mexico to California in great abundance, their habits greatly resembling those of the *D. coronata*. They display a great deal of familiarity, entering the towns, resorting to the gardens and hedge-rows, and even the corrals of the houses, descending also to the ground in company with Blackbirds and Sparrows.

This Warbler is thus shown to have a very extended distribution. It is now known to be found, at different seasons, from Central America to British Columbia, and from New Mexico to the Pacific.

We are indebted to the late Mr. Hepburn for all the knowledge we possess in reference to its nests, eggs, and breeding-habits. He procured their nests and eggs in Vancouver's Island. They were built in the forked branches of small shrubs. Around these the materials of which they were built were strongly bound, and to it the nests were thus securely fastened. They were quite long and large for the bird, being four inches in height, and three and a half in diameter. The cavity is small, but deep. The external periphery of the nest is made of coarse strips of bark, long dry leaves of wild grasses, and strong stalks of plants, intermingled with finer grasses, pieces of cotton cloth, and other materials. The inner nest is also a singular combination of various materials, yet carefully and elaborately put together. It is made up of fine grasses, feathers, lichens, mosses, fine roots, etc., all felted together and lined with a warm bedding of fur and feathers. Mr. Hepburn's observations, so far as they go, seem to show that this bird does not usually build in such lofty positions as Nuttall and others conjectured.

According to Mr. Hepburn, they arrive in Vancouver's Island in the middle of April, and generally frequent high trees, constructing their nests in the upper branches, though also frequently building in low bushes, a few feet from the ground. The number of their eggs is four. These, he states, have a pure white ground, and are spotted, usually chiefly about the larger end, with red markings.

Mr. Salvin met with both this species and the *D. coronata* at San Geronimo, November, 1859. They congregated together on the ground, where they principally obtained their food.

Dr. Cooper, in his paper on the fauna of Montana, mentions this Warbler as the only one of the genus seen by him between Fort Benton and Fort

Vancouver. It was very common throughout the mountains, and he found it in every portion of the country west of them, even where scarcely a bush was to be seen.

According to the careful observations of Mr. Robert Ridgway, this Warbler, during the summer months, in the Great Basin, chiefly inhabits the pines of the high mountain ranges, as well as the cedar and piñon woods of the desert mountains. In winter it descends to the lower portions, being then found among the willows, or, in small roving companies, hopping among the tree-tops in the river valleys. In manners it is said by him to resemble the *coronata*, but in their notes they differ very widely. A nest, containing three young, was found by Mr. Ridgway near the extremity of a horizontal branch of a pine-tree, about ten feet from the ground.

The eggs of the Audubon Warbler do not resemble those of any *Dendroica* with which I am acquainted, but are most like those of the Hooded Warbler. They measure .70 by .50 of an inch, have a reddish or pinkish white ground, and are sparingly marked with fine brown markings, tinted with a crimson shading.

Dendroica maculosa, BAIRD.

BLACK AND YELLOW WARBLER.

Motacilla maculosa, GM. Syst. Nat. I, 1788, 984. *Sylvia m.* LATH.; VIEILL.; BON.; NUTT.; AUD. Orn. Biog. I, II, V, pl. I, 123. *Sylvicola m.* SWAINS.; BON.; AUD. Birds Am. II, pl. xevi. *Rhinanoplus m.* CAL. Jour. III, 1855, 474 (Cuba). *Dendroica m.* BAIRD, Birds N. Am. 1858, 284; Review, 206. — SCLATER, P. Z. S. 1859, 363, 373 (Xalapa). — BRYANT, Pr. Bost. Soc. VII, 1859 (Bahamas). — SCLATER & SALVIN, Ibis, 1859, 11 (Guatemala). — LAWRENCE, Ann. N. Y. Lyc. 1861, 322 (Panama; winter). — GUNDLACH, Cal. Jour. 1861, 326 (Cuba; very rare). — SAMUELS, 238. *Sylvia magnolia*, WHIS. III, pl. xxiii, fig. 3.

SP. CHAR. *Male, in spring.* Bill dark bluish-black, rather lighter beneath. Tail dusky. Top of head light grayish-blue. Front, lore, cheek, and a stripe under the eye, black, running into a large triangular patch on the back between the wings, which is also black. Eyelids and a stripe from the eye along the head white. Upper tail-coverts black, some of the feathers tipped with grayish. Abdomen and lower tail-coverts white. Rump and under parts, except as described, yellow. Lower throat, breast, and sides streaked with black; the streaks closer on the lower throat and fore breast. Lesser wing-coverts, and edges of the wing and tail, bluish-gray, the former spotted with black. Quills and tail almost black; the latter with a square patch of white on the inner webs of all the tail-feathers (but the two inner) beyond the middle of the tail. Two white bands across the wings (sometimes coalesced into one) formed by the middle and secondary coverts. Part of the edge of the inner webs of the quills white. Feathers margining the black patch on the back behind and on the sides tinged with greenish. Length, 5 inches; wing, 2.50; tail, 2.25. Autumnal males differ in absence of black of back, front, sides of head, and to a considerable degree beneath, and in much less white on the wings and head.

Female in spring. Similar, but all the colors duller. Black of the back restricted to a central triangular patch.

HAB. Eastern Province of North America to Fort Simpson; Eastern Mexico to Guatemala and Panama; Bahamas; Cuba (very rare).

HABITS. The Black and Yellow Warbler, one of the most beautiful of this attractive family, was supposed by our earlier writers to be exceedingly rare. Wilson never met with more than two specimens, — one in Ohio, the other on the Mississippi, — and spoke of it as a very scarce species. In regard to its song he was quite at fault, denying to it any notes deserving the name of song. Nuttall, who had only seen it occasionally in Massachusetts, in the middle of May, regarded it as rare, and was unacquainted with its notes. Its history is now much better known, and neither its great rarity nor its deficiency as to melody can any longer be admitted.

At certain seasons and in particular places it is a very common species. It may be found during the breeding-season throughout North America east of the Great Plains, between latitude 44° and Fort Simpson in the fur country. During its migrations it may be met with in most of the Eastern States, in Eastern Mexico, and the northern portions of South America. It has been found in the Bahamas, and also in Cuba, where it is not common. Specimens have been received from Mexico, Guatemala, and Panama, and from Fort Resolution, Rupert House, and Fort Simpson, in Arctic America, and as far to the west as the mouth of Vermilion River. Dr. Bryant met with it in the Bahamas as early as the 15th of March, where it was quite common. M. Boucard found it at Playa Vicente, in the hot portion of the State of Oaxaca, Mexico.

In Western Massachusetts, Mr. Allen found it a common spring and autumn visitor, occurring in its northern flights from the middle of May to the first of June, and in the autumn as late as September 20. Professor Verrill found it in Western Maine, but not common, both in spring and fall, but had no reason to believe that it bred there. Mr. Boardman does not include it in his list of Calais birds, and I did not find it among the islands in the Bay of Fundy. In the vicinity of Halifax, during the months of June and July, it is one of the most common of the Warblers, occurring in every direction.

Mr. Audubon observed these Warblers in Louisiana, in their migrations, as early as the middle of March; but its appearance there, as well as in Kentucky and Ohio, appeared to be occasional and accidental. In autumn he has met with them in large numbers among the mountains of Northern Pennsylvania. They were passing southward with their young. While on his way to Labrador he noticed them in Maine, near Eastport, in May, very abundant along the roads, the fields, and the low woods, as well as in the orchards and gardens. The season was then not advanced, the weather cold; and these birds sheltered themselves by night among the evergreens, and were often so chilled as to be readily taken by the hand. He also met them wherever he landed in the neighboring islands in the Bay of Fundy and at Labrador.

The song of this Warbler is clear and sweetly modulated, and surpasses that of most of this family. It seems to prefer the interior of low woods, where its notes may chiefly be heard during the early summer, as it sings

while it is searching for its food among the branches, in the manner of the Vireos.

Like nearly all the members of this family, in its search for food it blends the habits of the Creepers with those of the Flycatchers, feeding upon insects in their every form, running up and down the trunks for the ova, larvæ, and pupæ, expertly catching the insect on the wing, and equally skilful in hovering over the expanded bud and searching the opening leaves.

Mr. Audubon found its nest placed deep among the branches of low fir-trees, supported by horizontal twigs, constructed of moss and lichens, and lined with fibrous roots and feathers. One found in Labrador, in the beginning of July, contained five eggs, small and rather more elongated than is common in this genus. They were white, and sprinkled with reddish dots at the larger end. The female fluttered among the branches, spreading her wings and tail in great distress, and returning to her nest as soon as the intruders were a few yards off. In August he saw a number of their young already following their parents and moving southward. In his expedition to Texas, Mr. Audubon again met this bird, in considerable numbers, early in April. Their eggs, he states, measure three fourths of an inch in length by nine sixteenths in breadth. In some the ground-color, instead of pure white, is of a yellowish tinge.

The writer found this Warbler abundant near Halifax in the early summer of 1850, frequenting the thick hemlock woods, confiding in its habits, unsuspicious, and easily approached. The distress, as described by Audubon, manifested in behalf of its own young, it is as ready to exhibit when the nest of a feathered neighbor is disturbed. A pair of Hudson's Bay Titmice, protesting against the invasion of their home, by their outcries brought a pair of these Warblers to their sympathetic assistance; and the latter manifested, in a more gentle way, quite as much distress and anxiety as the real parents. With expanded tail and half-extended wings they fluttered overhead among the branches, approaching us almost within reach, uttering the most piteous outcries.

Sir John Richardson found this Warbler as common and as familiar as the *D. astiva* on the Saskatchewan, and greatly resembling it in habits, though gifted with a much more varied and agreeable song.

Mr. Kennicott met this Warbler on Great Slave Lake, June 12, 1860, where he obtained a female, nest, and five eggs. The nest, loosely built, was placed in a small spruce about two feet from the ground, and in thick woods. The bird was rather bold, coming to her nest while he stood by it. This nest was only one and a half inches deep, with a diameter of three and a half inches; the cavity only one inch deep, with a diameter of two and a half inches. It was made almost entirely of fine stems of plants and slender grasses, and a few mosses. The cavity was lined with finer stems, and fine black roots of herbaceous plants.

The eggs of this Warbler are, in shape, a rounded oval, one end being but

slightly more pointed than the other. They measure .62 of an inch in length and .49 in breadth. Their ground-color is a light ashen hue, or a dull white, and this is more or less sprinkled with fine dots and blotches of a light brown. For the most part these are grouped in a ring about the larger end.

Mr. R. Deane, of Cambridge, found this bird breeding near Lake Umbagog. Its nest was in the fork of a low spruce about three feet from the ground. The nest contained four eggs, and was made of dry grasses, spruce twigs, and rootlets. It was lined with fine black roots, being a rather coarse structure for a Warbler. The eggs were nearly spherical, averaging .62 by .51 of an inch. Their ground-color was a creamy-white, sparsely marked with a few large blotches of lilac and umber.

Dendroica cærulea, BAIRD.

CÆRULEAN WARBLER; WHITE-THROATED BLUE WARBLER.

Sylvia cærulea, WILS. Am. Orn. II, 1810, 141, pl. xvii, fig. 5. *Sylvicola c.* SWAINS. : JARD. ; RICH. ; BON. : AUD. Orn. Biog. I, pl. xlix ; NUTT. *Dendroica c.* BAIRD, Birds N. Am. 1858, 280 ; Rev. 191. — GUNDEL. Cab. Jour. 1861, 326 (Cuba ; very rare). — SAMUELS, 579. *Sylvia rara*, WILSON, II, pl. xxvii, fig. 2. — BON. : AUD. Orn. Biog. I, pl. xlix. *Sylvia azurea*, STEPH. Shaw, Zool. X, 1817. — BON. Am. Orn. II, 1828, pl. xxvii (♀). — AUD. Orn. Biog. I, pl. xlviii, xlix ; NUTT. *Sylvia bifasciata*, SAY, Long's Exped. I, 1823, 170. *Sylvia populorum*, VIEILL. Encyc. Méth. II, 1823, 449 (from Wilson). Other localities : *Bogota*, SCLATER, P. Z. S. 1857, 18. *Panama R. R.*, LAWRENCE, ANN. N. Y. Lyc. 1861, 322. *Yucatan*, LAWR. *Veragua*, SALV.

SP. CHAR. *Male*. Above bright blue, darkest on the crown, tinged with ash on the rump ; middle of back, scapulars, upper tail-coverts, and sides of the crown, streaked with black. Beneath white ; a collar across the breast, and streaks on the sides, dusky-blue. Lores, and a line through and behind the eye (where it is bordered above by whitish), dusky-blue ; paler on the cheeks. Two white bands on the wings. All the tail-feathers except the innermost with a white patch on the inner web near the end. *Female*, greenish-blue above, brightest on the crown ; beneath white, tinged with greenish-yellow, and obsoletely streaked on the sides ; eyelids and a superciliary line greenish-white. Length, 4.25 ; wing, 2.65 ; tail, 1.90.

HAB. Eastern United States, north to Niagara Falls ; Cuba (very rare) ; Guatemala ; Veragua, Panama, and Bogota. Not recorded from Mexico (except Yucatan), or West Indies (except Cuba).

The autumnal adult plumage of both sexes is, in every respect, exactly like the spring dress. Young males in late summer are very similar to adult females, but are purer white below, and less uniform greenish-blue above, the dark stripes on sides of the crown and black centres to scapulars being quite conspicuous ; the young female, at the same season, is similar in pattern to the adult, but is dull green above, without any tinge of blue, and light buffy-yellow below.

There is considerable variation in adult males, especially in the width of

the pectoral collar; one (No. 60,877, Mt. Carmel, Wabash Co., Ill., Aug. 9) has this entirely interrupted. In this individual there is no trace of a whitish supra-auricular streak; while others from the same locality, and obtained at the same date, have the band across the jugulum continuous, and a quite distinct white streak over the ear-coverts.

HABITS. Of this somewhat rare Warbler very little is as yet well known. Its habits and distribution during the breeding-season need more light than we now possess to enable us to give its story with any degree of exactness. Its appearance in Pennsylvania, Ohio, Illinois, and Missouri early in May, when Warblers that go north to breed are on their way, at first suggested its belonging to that class. It is not known to proceed any farther north, except in accidental instances; though the writer has been assured, and has no reason to doubt the fact, that it abounds and breeds in the neighborhood of Niagara Falls. I can find no good evidence that it ever occurs in Massachusetts. Individuals have been obtained in northern South America, Panama, and Cuba. Dr. Woodhouse describes it as quite common in Texas and in the Indian Territory, where it breeds, as he obtained both the old and the young birds. It was also abundant among the timbered lands of the Arkansas and its tributaries. It was not obtained in any other of the government expeditions, nor was it found in Arizona by Dr. Coues. Mr T. M. Trippe noticed a single individual near Orange, N. Y. Wilson supposed them to breed in Pennsylvania, though he was never able to find their nests. He usually met with these birds in marshes or on the borders of streams among the branches of poplars. Their habits were those of the Flycatchers. He saw none later than the 20th of August. Describing this species as the Blue-green Warbler, as met with by him on the banks of the Cumberland early in April, he mentions its gleaning for food among the upper branches of the tallest trees, rendering it difficult to be procured. Its resemblance, in habits, to Flycatchers, he again remarks. Its only note was a feeble *cheep*.

According to Audubon, this Warbler appears in Louisiana, where it also breeds early in spring, and leaves the first of October. Like all its family, it is quite lively, has a similar flight, moves sideways up and down the branches, and hangs from the ends of the twigs in its search for insects.

Mr. Audubon also states that the liveliness of the notes of this Warbler renders it conspicuous in the forests, the skirts of which it frequents. Its song, though neither loud nor of long continuance, he speaks of as extremely sweet and mellow. He found it as numerous in the State of Louisiana as any other Warbler, so that he could sometimes obtain five or six in a single walk.

The nest he describes as placed in the forks of a low tree or bush, partly pensive, projecting a little above the twigs to which it is attached, and extending below them nearly two inches. The outer part is composed of the fibres of vines and the stalks of herbaceous plants, with slender roots arranged in a circular manner. The nest is lined with fine dry fibres of the

Spanish moss. The eggs are five in number, of a pure white with a few reddish spots about the larger end. When disturbed during incubation, the female is said to trail along the branches with drooping wings and plaintive notes, in the manner of *D. aestiva*. After the young have left the nest, they move and hunt together, in company with their parents, evincing great activity in the pursuit of insects. They are also said to have a great partiality for trees the tops of which are thickly covered with grapevines, and to occasionally alight on tall weeds, feeding upon their seeds.

In his visit to Texas, Mr. Audubon met a large number of these birds apparently coming from Mexico. On one occasion he encountered a large flock on a small island.

Mr. Nuttall mentions finding these birds very abundant in Tennessee, and also in West Florida.

In only a single instance has the writer met with this Warbler. This was about the middle of June, at the Fairmount Water Works in the city of Philadelphia, where, among the tops of the trees, a single individual was busily engaged in hunting insects, undisturbed by the large numbers and vicinity of visitors to the grounds. It kept in the tops of the trees, moving about with great agility.

Mr. Ridgway gives the Cærulean Warbler as the most abundant species of its genus in the Lower Wabash Valley, not only during the spring and fall migrations, but also in the summer, when it breeds more plentifully even than the *D. aestiva*. It inhabits, however, only the deep woods of the bottom lands, where it is seldom seen, and only to be distinguished by the naturalist. Inhabiting, mostly, the tree-tops, it is an inconspicuous bird, and thus one that easily escapes notice. In its habits it is perhaps less interesting than others of its genus, being so retired, and possessing only the most feeble notes.

Dendroica blackburniæ, BAIRD.

BLACKBURNIAN WARBLER; ORANGE-THROATED WARBLER.

- Motacilla blackburniæ*, GMELIN, Syst. Nat. I, 1788, 977. *Sylvia bl.* LATH.; WILSON, III, pl. xxiii. — NUTT.; AUD. Orn. Biog. II, V, pl. cxxxv, cccxcix. *Sylvicola bl.* JARD.; RICH.; AUD. Birds Am. II, pl. lxxxvii. *Rhimanphus bl.* CAB. Mus. Hein. 1850, 19. *Dendroica bl.* BAIRD, Birds N. Am. 1858, 274; Rev. 189. — SCLATER & SALVIN, Ibis, 1859, 11 (Guatemala). — SCLATER, P. Z. S. 1859, 363 (Xalapa); Ib. 1860, 64 (Ecuador). — Ib. Catal. 1861, 30, no. 187 (Pallatanga and Nanegal, Ecuador). — SAMUELS, 227. — SUNDEVALL, Ofv. 1869, 611. — DRESSER, Ibis, 1865, 478. ? *Motacilla chrysocephala*, GMELIN, I, 1788, 971 (*Figuier orangé et F. étranger*, BUFF. V, 313, pl. lviii, fig. 3, Guiana). *Sylvia parus*, WILS. V, pl. xlv, fig. 3. — AUD. Orn. Biog. II, pl. cxxxiv. *Sylvicola parus*, AUD. Birds Am. II, pl. lxxxiii. *Sylvia lateralis*, STEPH. ? *Motacilla incana*, GMEL. I, 1788, 976. *Sylvia incana*, LATH.; VIEILL. ? *Sylvia melanorhoa*, VIEILL. Nouv. Dict. XI. 1817, 180 (Martinique). — Ib. Encycl. Méth. II, 444.
- Localities quoted: *Bogota*, SCLATER, P. Z. S. 1855, 143. *Panama*, LAW. Ann. N. Y. Lyc. VII, 62. *Costa Rica*, CAB. Jour. 1860, 328. *Bahamas*, BRYANT, Bost. Pr. VII, 1859. *Veragua*, SALVIN. *Orizaba* (winter; rare), SUMICHRIST.

SP. CHAR. Upper parts nearly uniform black, with a whitish scapular stripe and a large white patch in the middle of the wing-coverts. An oblong patch in the middle of the crown, and the entire side of the head and neck (including a superciliary stripe from the nostrils), the chin, throat, and forepart of the breast, bright orange-red. A black stripe from the commissure passing around the lower half of the eye, and including the ear-coverts; with, however, an orange crescent in it, just below the eye, the extreme lid being black. Rest of under parts white, strongly tinged with yellowish-orange on the breast and belly, and streaked with black on the sides. Outer three tail-feathers white, the shafts and tips dark brown; the fourth and fifth spotted much with white; the other tail-feathers and quills almost black. *Female* similar; the colors duller; the feathers of the upper parts with olivaceous edges. Length, 5.50; wing, 2.83; tail, 2.25.

HAB. Eastern Province of United States; Eastern Mexico, and south to Bogota and Ecuador; Bahamas alone of West Indies with certainty.

Autumnal males resemble the females. They have two white bands instead of one; the black stripes on the sides are larger; under parts yellowish; the throat yellowish, passing into purer yellow behind.

Autumnal young birds have the same pattern of coloration, but the dark portions are dull grayish-umber, with the streaks very obsolete, and the light parts dull buffy-white, tinged with yellow on the jugulum; there is neither clear black, bright yellow, nor pure white on the plumage, except the latter on the wing-bands and tail-patches.

HABITS. This somewhat rare and very beautiful Warbler requires additional investigation into its habits before its history can be regarded as satisfactorily known. Save in reference to its wider distribution during its southern migrations, little more is known as to its habits than where Audubon left its history nearly thirty years since. The Smithsonian collection has specimens from Pennsylvania, Ohio, Wisconsin, Missouri, Illinois, and from Central America. Mr. Selater has received specimens from Mexico, and from Ecuador in South America. Other writers mention having specimens from Guiana, Martinique, and Panama, and Dr. Bryant found it in the Bahamas. It is thus known to have a wide distribution from the Atlantic to the Mississippi River, as far to the north probably as Labrador. Its area of reproduction is not known with exactness, but the southern limit is supposed to be the high wooded districts of Pennsylvania, New York, and New England. A young bird was taken by Holboll, October 16, 1845, at Frederikshaab, Greenland. In 1837 an egg was sent me from Coventry, Vt., which purported to belong to this bird; and in the following summer its nest and eggs were procured in a wild, secluded part of Roxbury, Mass. In neither case was the identification entirely free from doubt.

Dr. Bachman states that when a resident of Lansingburg, N. Y., in 1833, he saw a pair of these birds in the act of constructing their nest. Mr. Allen has no doubt that a few breed in the vicinity of Springfield, Mass., as he has obtained them as late as June 24. He found it most common in mixed or hard-wood forests. It arrives about the middle of May. Professor Verrill gives it as a summer resident of Western Maine, though rarely seen on

account of its habit of keeping concealed among the dense foliage. Mr. Boardman gives the same account of its residence in summer in the neighborhood of Calais.

Mr. Audubon did not regard this bird and his "Hemlock Warbler" as the same species, but gave distinct and different accounts of their habits. We have therefore to receive with caution these records of peculiarities. He found the Blackburnian Warbler breeding in Northeastern Maine, in New Brunswick, in the Magdaline Islands, and in Labrador and Newfoundland. He states, correctly, that it has a very sweet song of five or six notes, much louder than seemed possible from the size of the bird. It pursues its insect prey among the branches of the fir-trees, moving along after the manner of the common Redstart.

Mr. McCulloch, of Halifax, gave Mr. Audubon a nest of this bird with three eggs. The nest was formed externally of different textures, lined with fine delicate strips of bark and a thick bed of feathers and horse-hair. The eggs were small, conical, with a white ground spotted with light red at the larger end. The nest was in the small fork of a tree five feet from the ground, and near a brook.

The nest obtained in Roxbury was in a bush, a few feet from the ground, in a very wild region of forest and rocks. Externally, except in its length, which was less, it resembled a nest of the *G. trichas*, being made of coarse, dry grasses. Internally it was much more warmly lined with feathers and soft fur than is the case in nests of the Yellow-Throat. The eggs were of a crystal whiteness, marked at their larger end with dark purple, and but for their smaller size might have been mistaken for those of *G. trichas*. The position of the nest, however, was conclusive in regard to this point. The egg from Coventry was substantially similar, except that reddish-brown dots were mingled with the purple markings, in the form of a wreath around the larger end.

Wilson describes this Warbler as songless, but attributes to its counterpart, the Hemlock Warbler, a very sweet song of a few low notes, — a very different account from that given by Audubon of the song of the Blackburnian.

Mr. Paine states that this species is resident during the summer months in Randolph, Vt. It is, he says, a very close companion of the *D. virens*, arriving at the same time with it even to a day, or about the 10th of May. Its dry chirping song may then be heard in striking contrast with the sweet notes of the *virens*. He was not able to find its nest.

Mr. C. W. Wyatt met with this species as a winter resident at Alto, in Colombia, South America. Its upward range seemed to be terminated only by the paramos. Among the oaks on the Pamplona road he found it very common just under the paramo, the bright orange throat of the male making it a very conspicuous bird. He was led to believe that they were not found there at a lower elevation than five thousand feet.

Dendroica dominica, BAIRD.**YELLOW-THROATED GRAY WARBLER.**

Motacilla dominica, L. Syst. Nat. 12th ed. 1766, 334 (*Ficedula dominica cinerea*, BRISS. III, 520, pl. xxvii, fig. 3). *Dendroica dominica*, BAIRD, Rev. Am. Birds, 209. *Motacilla superciliosa*, BOUDAERT, Tableau Pl. enl. 686, fig. 1, 1783. *Dendroica superciliosa*, BAIRD, Birds N. Am. 1858, 289. — SCLATER (Xalapa, Oaxaca, Jamaica, Mexico). — SCLATER & SALVIN, Ibis, 1860, 274 (Ducuas, Guat. ; Sept.). — MARCH. Pr. A. N. Sc. 1863, 293 (Jamaica). — GUNDELACH, Cab. Jour. 1861, 326 (Cuba ; very common). *Motacilla flavicollis*, GMELIN, Syst. Nat. I, 1788, 959. *Sylvia fl.* LATH. ; WILS. II, pl. xii, fig. 6. *Motacilla pensilis*, GMELIN, Syst. Nat. I, 1788, 960. *Sylvia p.* LATH. ; VIEILL. (St. Domingo). — BON. ; AUD. Orn. Biog. I, pl. lxxxv ; NUTT. *Sylvicola pens.* RICH ; BON. ; AUD. Birds Am. II, pl. lxxix. — GOSSE, Birds Jam. 1847, 156 (Jamaica). *Rhinanphus pens.* CAB. Jour. III, 474 (Cuba).

Other localities : *Cordova*, SCLATER, P. Z. S. 1856, 291. *St. Domingo*, SALLÉ, P. Z. S. 1857, 231. *Jamaica*, GOSSE, Birds Jam. 156.

SP. CHAR. Upper parts uniform grayish-blue. Chin and throat bright yellow ; under parts white. Forehead, and sometimes most of crown, lores and cheeks, sides of throat, and numerous streaks on the sides of the breast, black. A stripe from the nostrils over and behind the eye, a crescent on the lower eyelid, the sides of the neck behind the black cheek-patch, and two conspicuous bands on the wings, white. Terminal half of the outer webs of the outer two, and terminal third of the third tail-feathers, white. *Female* almost precisely similar. Length, 5.10 ; wing, 2.60 ; tail, 2.30. (3,322.)

HAB. Eastern Province of United States, north to Washington and Cleveland ; in winter abundant in Cuba ; St. Domingo and Jamaica ; Mexico (Colima on west coast), and Guatemala. Resident in Jamaica?

An autumnal male (No. 1,098, Washington, D. C.) has the bluish-ash above obscured by a wash of brown ; the black "mask" less sharply defined, the streaks on forehead wanting ; the yellow paler and duller, and the white beneath soiled with brownish.

In general pattern of coloration this species resembles two others ; one from Arizona, the other from Porto Rico. The diagnoses are as follows :—

COMMON CHARACTERS. Upper parts ash-gray, the forehead and sides of vertex black. A line from nostril to above eye (passing into white behind), chin, and throat, yellow, margined laterally with blackish ; crissum, inside of wings, axillars, and two bands on wings, white.

Superciliary line extending to the nape, and white, excepting sometimes anterior to the eye. Cheeks black, separated from the ash of the neck by a white patch. Eyelids and infra-ocular crescent white. Back not streaked. Bill lengthened, gonys almost concave.

Yellow confined to jugulum ; rest of under parts white ; the sides streaked with black. *dominica*.

Superciliary line scarcely extending beyond the eye, and yellow, excepting at extreme end. Cheeks ashy, like sides of neck ; dusky only near the eye, and not bordered on side of neck behind by white. Eyelids and infra-ocular crescent yellow. Back streaked. Bill short, gonys slightly convex.

Yellow of under parts confined to jugulum; rest of under parts white;
 the sides streaked with black *gracia*.
 Yellow of under parts extending to crissum. Sides scarcely streaked.
adelaida.¹

In the Review (p. 209) several variations in this species are noted; but at that time there was not a sufficient number of specimens to warrant our coming to a conclusion as to their value. Now, however, we have better material before us, and upon the examination of about thirty specimens, including two series of nearly equal numbers, — one from the Atlantic States and the West Indies, the other from the Mississippi region and Middle America, — find that there are two appreciably different races, to be distinguished from each other by points of constant difference. All birds of the first series have the bill longer than any of the latter, the difference in a majority of the specimens being very considerable; they also have the superciliary stripe bright yellow anteriorly, while among the latter there is never more than a trace of yellow over the lores, and even this minimum amount is discernible only in one or two individuals. The West Indian form is, of course, the true *dominica*, and to be distinguished as var. *dominica*; as none of the synonymes of this species were founded upon the Mexican one, however, it will be necessary to propose a new name; accordingly, the term var. *albilora* is selected as being most descriptive of its peculiar features.

The following synopsis, taken from typical specimens, shows the differences between these two races: —

- (No. 3,322, ♂, Liberty County, Georgia.) Bill (from nostril). .45; tarsus, .60; wing, 2.60; tail, 2.00. Superciliary stripe, anterior to eye, wholly bright yellow; yellow of chin and maxillæ extending to the bill. *Hab.* In summer, Atlantic States of United States, north to Washington. In winter, and possibly all the year, in Cuba, Santo Domingo, and Jamaica. var. *dominica*.
 (No. 61,136, ♂, Belize, Honduras.) Bill (from nostril). .35; tarsus, .60; wing, 2.70; tail, 2.20. Superciliary stripe wholly white; yellow of chin and maxillæ bordered narrowly next the bill with white. *Hab.* In summer, the Mississippi region of United States, north to Lake Erie; common in South Illinois. In winter, and possibly all the year, in Mexico, south to Guatemala, Yucatan on the Atlantic, and Colima on the Pacific side var. *albilora*.

HABITS. The history of the Yellow-throated Warbler is very imperfectly known. Its geographical distribution is irregular and apparently eccentric. Found occasionally, rather than frequently, in the Southern Atlantic and Gulf States, it occurs irregularly as far north as Washington, New York City, Cleveland, O., Union County, Ill., and Kansas. In the last place it is supposed also occasionally to breed. West of this it has not been traced in any portion of the United States. It was obtained in Tamaulipas, Mexico, by Lieutenant Couch, and on the western coast Mr. Xantus found it at Colima. Mr. Selater has also procured it from other portions of Mexico, and M. Bou-

¹ *Dendroica adelaidæ*, BAIRD, Rev. 1865, 212. *Hab.* Porto Rico.

card took it at Oaxaca. It has been obtained in Guatemala and Jamaica. In the latter place it is found the entire season. In Cuba, in the winter, it is quite common. It has also been found in St. Domingo, and probably in the other West India Islands. Mr. Gosse states that these birds do not appear in Jamaica before the 16th of August, and that they leave by the first of April. On the other hand, Mr. March, in his notes on the birds of that island, states that on the 8th of August he obtained an old bird and two young, the latter of which he was confident had been hatched on the island, and his son had met with the birds all through the summer, and had procured a specimen on the 4th of June.

Wilson states that the habits of this species partake more of those of the Creeper than of the true Warbler. He met with it in Georgia in the month of February. He speaks of its notes as loud, and as resembling those of the Indigo-Bird. It remained some time creeping around the branches of the same pine, in the manner of a *Parus*, uttering its song every few minutes. When it flew to another tree, it would alight on the trunk and run nimbly up and down in search of insects. They are said to arrive in Georgia in February, after an absence of only three months. Wilson states that they occur as far north as Pennsylvania, but does not give his authority. The food of this species appears to be larvæ and pupæ, rather than winged insects. Those dissected by Mr. Gosse in Jamaica were found to have quite large stomachs, containing caterpillars of various kinds.

Nuttall and Audubon are very contradictory in their statements touching its nesting, and it is not probable that the accounts given by either are founded upon any reliable authorities. The former describes a nest remarkable both for structure and situation, said to have been found in West Florida, suspended by a kind of rope from the end of branches over a stream or a ravine. This nest, entirely pensile, is impervious to rain, and with an entrance at the bottom. He gives a very full and minute description of this nest, but gives no authority and no data to establish its authenticity. We can therefore only dismiss it as probably erroneous.

On the other hand, Mr. Audubon claims to have seen its nest, of which he gives a very different account. He describes it as very prettily constructed, like the nests of any other of this genus, its outer parts made of dry lichens and soft mosses, the inner of silky substances and fibres of the Spanish moss. The eggs are said to be four in number, with a white ground-color and a few purple dots near the larger end. He thinks they raise two broods in a season in Louisiana. These nests are not pensile, but are placed on the horizontal branch of the cypress, from twenty to fifty feet above the ground. It closely resembles a knot or a tuft of moss, and therefore is not easily discovered from below.

A nest containing a single egg, found by Mr. Gosse near Neosho Falls, and supposed to belong to this species, but not fully identified, was built in a low sapling a few feet from the ground, and is a very neat structure, such as is

described by Audubon. The egg is pure crystal-white, oblong and pointed, and marked with purple and brown.

Mr. Ridgway informs me that in Southern Illinois, at least in the valley of the Lower Wabash, the Yellow-throated Warbler may be said to be at least a regular, though not common, summer sojourner. Though it inhabits chiefly the swampy portions of the bottom-lands, it makes frequent visits to the orchards and door-yards, less often, however, in the breeding than in the migrating season. In its manners it is almost as much of a Creeper as the *Mniotilta varia*, being frequently seen creeping not only along the branches of trees, but over the eaves and cornices of buildings, with all the facility of a Nuthatch.

Eggs supposed to be of this species, taken near Wilmington, N. C., by Mr. Norwood Giles (16,199, Smith. Coll.), have a ground-color of dull ashy-white, with a livid tinge. They are thickly speckled, chiefly around the larger end, with irregular markings of rufous, and fainter ones of lilac interspersed with a very few minute specks of black. They are broadly ovate in form, and measure .70 by .55 of an inch.

***Dendroica graciae*, COUES.**

ARIZONA WARBLER.

Dendroica graciae (COUES), BAIRD, Rev. Am. Birds, I, April, 1865; p. 210. — ELLIOT, Illust. Birds N. Am. I, vi. — COOPER, Orn. Cal. I, 1870, 563 (Appendix).

SP. CHAR. *Adult male* (No. 40,680, May 1, 1865, Dr. E. Coues). Whole upper parts, including ear-coverts and sides of neck, ash-gray; small cuneate streaks over the crown, coalesced laterally into a broad stripe on each side, with larger cuneate streaks on the interscapular region, and inconspicuous linear streaks on upper tail-coverts, black. Two conspicuous white bands across the wing, formed by the tips of middle and secondary coverts; secondaries passing externally into light ash. Lateral tail-feather entirely white, except about the basal third of the inner web (the dusky running some distance toward the end along the edge), and a broad streak covering most of the terminal fourth of the outer web, which are clear dusky; the next feather has the outer web exactly the same, but almost the basal half of the inner is dusky; on the next the white is confined to an oblong spot (not touching the inner edge) on about the terminal third, while the outer web is only edged with white; the rest have no white at all. A superciliary stripe extending about .20 of an inch behind the eye (that portion behind the eye white), the lower eyelid, maxillæ, chin, throat, and jugulum pure gamboge-yellow. Rest of lower parts, including lining of wing, pure white; the sides conspicuously streaked with black; lores, and a few obsolete streaks along the junction of the ash and yellow, dusky. Wing, 2.60; tail, 2.20; bill (from nostril), .30; tarsus, .60. *Adult female* (40,685, May 24). Similar to the male, but colors duller, and markings less sharply defined. Wing, 2.45; tail, 2.00. *Young* (36,992, August 11). Above brownish-gray *without streaks*. Beneath ochraceous-white, obsoletely streaked along the sides. Yellow superciliary stripe not well defined, and only a tinge of yellow on the jugulum, the throat being grayish-white. Wings and tail nearly as in the adult. The young in autumnal plumage is similar, but the yellow occupies its usual area; it is, however, much duller, as well as lighter, than in the adult.

HAB. Fort Whipple, near Prescott, Arizona. Belize, British Honduras (var. *decora*).

This species is most closely related to *D. adelaidae*, from Porto Rico; but in the latter the yellow beneath extends back to the crissum, covering even the sides; there are also no streaks on the sides or back; the proportions, too, are quite different, the wings and tail being scarcely three fourths as long, while the bill and feet are much the same size, the tarsi even much shorter. A specimen (No. 41,808 ♂) from Belize, Honduras, differs so essentially from the Fort Whipple specimens, that it is, beyond doubt, entitled to a distinctive name. The differences between these two very well marked races can best be expressed in a table, as follows:—

- (10,680, ♂, Fort Whipple, Arizona). Bill (from nostril), .30; tarsus, .60; wing, 2.60; tail, 2.20. Superciliary stripe extending .20 behind the eye, that portion behind the eye white; yellow of jugulum not spreading over breast (ending 1.35 from the bill). Streaks of crown coalesced into a broad stripe on each side; those of back broad, and those on upper tail-coverts almost obsolete. Wing-bands, .20 wide. Lore dusky-grayish. *Hab.* Fort Whipple, near Prescott, Arizona; abundant, breeding (Cones) var. *gracila*.
 (41,808, ♂, Belize). Bill, .30; tarsus, .60; wing, 2.20; tail, 1.95. Superciliary stripe scarcely passing the eye, wholly yellow; yellow of jugulum spreading over breast (ending 1.60 from the bill). Streaks of the crown scarcely coalesced along its sides; those on back not longer than those on crown, and those on upper tail-coverts very conspicuous. Wing-bands, .10 wide. Lore deep black. *Hab.* Belize, Honduras, resident? var. *decora*.

HABITS. We are indebted to Dr. Elliott Cones for all that we at present know in reference to this recently discovered species. He first met with it July 2, 1864, in the Territory of Arizona. Dr. Cones first noticed this bird among the pine woods covering the summit of Whipple's Pass of the Rocky Mountains. He saw no more in his journey into Central Arizona until he was again among the pines at Fort Whipple. There he again found it, and it proved to be a very common bird. Dr. Cones anticipates that this species will yet be found to occur in the forests of the San Francisco Mountains, and that its range will be ascertained to include all the pine tracts of New Mexico and Arizona, from the valley of the Rio Grande to that of the Great Colorado River. He also has no doubt that it breeds near and around Fort Whipple.

Specimens found at Belize, first believed to be identical with those from Arizona, are now referred to a race called *decora*.

According to Dr. Cones's observations, the Warbler arrives at Fort Whipple about the 20th of April, and remains in that neighborhood until the third week in September. It is found almost exclusively in pine woods, is active, industrious, and noisy, and possesses very marked flycatching habits, flying out from its perch to catch passing insects. It has been, so far, found almost exclusively among the tallest trees.

In regard to the song of this species, Dr. Cones states that it appears to have several different notes. One of these is the ordinary *tsip*, given out at all times by both old and young of all kinds of small insectivorous birds.

Its true song, heard only in spring, consists of two or three loud sweet whistles, sometimes slurred, followed by several continuous notes, resembling *chir-r-r*, in a wiry but clear tone. Their notes are of great power for the size of the bird. It also has another and quite different song, which Dr. Coues thought greatly resembled the notes of the common American Redstart.

As all the birds he noticed had mated by the first of May, he has no doubt that they raise two broods in a season; and the fact that he found newly fledged young as late as the middle of August seems to corroborate the correctness of his supposition. In regard to the eggs, nest, or breeding-habits of this species, we have as yet no information.

***Dendroica pennsylvanica*, BAIRD.**

CHESTNUT-SIDED WARBLER.

Motacilla pennsylvanica, LINN. Syst. Nat. I, 1766, 333, no. 19; GMELIN. *Sylvia p.* LATH.; WILSON, 1, pl. xiv, fig. 5. *Dendroica p.* BAIRD, Birds N. Am. 1858, 279; Rev. 191. — SCLATER & SALVIN, Ibis, 1859, 11; 1860, 273 (Coban, Guat.; November). — SAMUELS, 231. *Sylvia icterocephala*, LATH. Ind. Orn. II, 1790, 538. — VIEILL.; BON.; AUD. Orn. Biog. I, pl. lix. *Sylvicola ic.* SWAINS.; JARD.; AUD. Birds Am. II, pl. lxxxii. *Dendroica ic.* SCLATER, P. Z. S. 1859, 363 (Xalapa), 373 (Oaxaca).

Other localities: *Bahamas*, BRYANT, Pr. Bost. Soc. VII, 1859. *Costa Rica*, CAB. Jour. 1860, 328. *Panama*, winter, LAW, Ann. N. Y. Lyc. 1861, 322. *Yucatan*, LAW. *Veragua*, SALV.

SP. CHAR. *Male*. Upper parts streaked with black and pale bluish-gray, which becomes nearly white on the forepart of the back; the middle of the back glossed with greenish-yellow. The crown is continuous yellow, bordered by a frontal and superciliary band, and behind by a square spot of white. Loral region black, sending off a line over the eye, and another below it. Ear-coverts and lower eyelid and entire under parts pure white, a purplish-chestnut stripe starting on each side in a line with the black mustache, and extending back to the thighs. Wing and tail-feathers dark brown, edged with bluish-gray, except the secondaries and tertiaries, which are bordered with light yellowish-green. The shoulders with two greenish-white bands. Three outer tail-feathers with white patches near the end of the inner webs.

Female like the male, except that the upper parts are yellowish-green, streaked with black; the black mustache scarcely appreciable. Length, 5.00; wing, 2.50; tail, 2.20.

HAB. Eastern Province of the United States: *Bahamas*; *Guatemala* to *Costa Rica* and *Panama* R. R. Not recorded from *Mexico* proper or *West Indies*, except *Bahamas*.

The young in autumn is very different from either male or female in spring. The entire upper parts are of a continuous light olive-green; the under parts white; the sides of the head, neck, and breast ash-gray, shading insensibly into and tingeing the white of the chin and throat. No black streaks are visible above or on the cheeks, and the eye is surrounded by a continuous ring of white not seen in spring. In this plumage it has frequently been considered as a distinct species.

The male in this plumage may usually be distinguished from the female

by possessing a trace, or a distinct stripe, of chestnut on the flanks, the young female at least lacking it.

HABITS. The geographical distribution of this common species during its season of reproduction is inferred rather than positively known. So far as I am aware, it is not known to breed farther south than Massachusetts. Yet it is probable that, when we know its history more exactly, it will be found during the breeding-season in different suitable localities from Pennsylvania to Canada. Mr. H. W. Parker, of Grinnell, Iowa, mentions this bird as common in that neighborhood.

Until recently it was regarded as a rather rare species, and to a large extent it had escaped the notice of our older ornithological writers. Wilson could give but little account of its habits. It passed rapidly by him in its spring migrations. He did not regard it as common, presumed that it has no song, and nearly all that he says in regard to it is conjectural. Mr. Audubon met with this species but once, and knew nothing as to its habits or distribution. Mr. Nuttall, who observed it in Massachusetts, where it is now known to be not uncommon in certain localities, also regarded it as very rare. His account of it is somewhat hypothetical and inexact. Its song he very accurately describes as similar to that of the *D. astiva*, only less of a whistle and somewhat louder. He represents it as expressed by *tsh-tsh-tsh-tshyia*, given at intervals of half a minute, and often answered by its mate from her nest. Its lay is characterized as simple and lively. Late in June, 1831, he observed a pair collecting food for their young on the margin of the Fresh Pond swamps in Cambridge.

Mr. Allen has found this species quite common in Western Massachusetts, arriving there about the 9th of May, and remaining through the summer to breed. He states — and his observations in this respect correspond with my own — that during the breeding-season they frequent low woods and swampy thickets, nesting in bushes, and adds that they are rarely found among high trees. They leave there early in September.

Professor Verrill found this Warbler a common summer visitant in Western Maine, arriving about the second week in May, and remaining there to breed. Mr. Boardman thinks it reaches Eastern Maine about the middle of May, and is a common summer resident. I did not meet this species either in New Brunswick or Nova Scotia, nor was Dr. Bryant more fortunate, but Lieutenant Bland gives it in his manuscript list of the birds found in the neighborhood of Halifax.

Mr. Ridgway informs me that this species breeds in the oak openings and among the prairie thickets of Southern Illinois.

During the eight months that are not included in their season of reproduction, this species is scattered over a wide extent of territory. Their earliest appearance in the Northern States (at Plattsburgh) is April 26, and they all disappear early in September. At other times they have been met with in the Bahamas, in Mexico, Guatemala, Costa Rica, and Panama. It has

not yet been detected in the West Indies. M. Boucard obtained specimens at Playa Vicente, in the hot country of Oaxaca, Mexico.

In the neighborhood of Calais, Mr. Boardman informs me that this Warbler is common, and that its habits resemble those of the Black-poll Warbler more than those of any other of the genus. It always nests in bushes or in low trees, and in the vicinity of swamps.

Among the memoranda furnished to the late Mr. Kennicott by Mr. Ross is one to the effect that the Chestnut-sided Warbler was observed at Lake of the Woods, May 29. How common it is at this point is not stated.

Mr. C. S. Paine regards the Chestnut-sided Warbler as one of the sweetest singers that visit Vermont. He describes it as very confiding and gentle in its habits. It is chiefly found inhabiting low bushes, in the neighborhood of taller trees, and it always builds its nest in the fork of a low bush, not more than from three to five feet from the ground. He has seen many of their nests, and they have all been in similar situations. They will permit a very near approach without leaving their nests. These are constructed about the last of May. Their song continues until about the last of June. After this they are seldom heard.

J. Elliot Cabot, Esq., had the good fortune to be the first of our naturalists to discover in June, 1839, the nest and eggs of this Warbler. It was fixed on the horizontal forked branch of an oak sapling, in Brookline, Mass. The female remained sitting on her nest until so closely approached as to be distinctly seen. The nest was of strips of red-cedar bark, and well lined with coarse hair, and was compact, elastic, and shallow. It contained four eggs, the ground-color of which was white, over which were distributed numerous distinct spots of umber-brown. These were of different sizes, more numerous towards the larger end.

In regard to their breeding in Pennsylvania, Mr. Nuttall mentions in the second edition of his work that he met them among the Alleghanies at Faranville in full song, and had no doubt that they were nesting there at the time.

The Chestnut-sided Warbler usually constructs its nest in localities apart from cultivated grounds, on the edges of low and swampy woods, but in places more or less open. Quite a number of their nests have been met with by Mr. George O. Welch, of Lynn, Mass. Their more common situation has been barberry-bushes. The nests vary from about two and a half to three and a half inches in external height, and have a diameter of from three to four inches. The cavity is about two inches deep. They are usually composed externally of loosely intertwined strips of the bark of the smaller vegetables, strengthened by a few stems and bits of dry grasses, and lined with woolly vegetable fibres and a few soft hairs of the smaller animals. They are usually very firmly bound to the smaller branches by silky fibres from the cocoons of various insects. These nests were all found in open places, in low, wild marshy localities, but none far from a cultivated neighborhood, and the

situations chosen for the nests do not differ materially from those usually selected by the common *D. aestiva*.

The eggs of this Warbler are of an oblong-oval shape, have a ground-color of a rich creamy-white, and are beautifully spotted, chiefly about the larger end, with two shades of purple and purplish-brown. They measure .65 by .49 of an inch.

Dendroica striata, BAIRD.

BLACK-POLL WARBLER.

Muscicapa striata, FORSTER, Phil. Trans. LXII, 383, 428. *Motacilla* s. GMELIN. *Sylvia* s. LATH. ; VIEILLLOT ; WILS. ; BON. ; NUTT. ; AUD. Orn. Biog. II, pl. cxxxiii. — LEMBEVE, Av. Cuba, 1850, 33. *Sylvicola* s. SWAINSON ; BON. ; AUD. Birds Am. II, pl. lxxviii. — REINHARDT, Vid. Med. for 1853, 1854, 73 (Greenland). — MAX. Cab. Jour. VI, 1858, 113. *Mniotilta* s. REINH. Ibis, 1861, 6 (Greenland). *Rhinanphus* s. CAB. Jour. III, 475 (Cuba). *Dendroica* s. BAIRD, Birds N. Am. 1858, 280 ; Rev. 192. — COUES, Pr. A. N. Sc. 1861, 220 (Labrador coast). — GUNDEL, Cab. Jour. 1861, 326 (Cuba; rare). — SAMUELS, 233. — DALL & BANNISTER (Alaska). ? *D. atricapilla*, LANDBECK, Wiegmann's Archiv, 1864, 56 (Chile).

Other localities quoted : *Bogota*, SCLATER, P. Z. S. 1855, 143. *Bahamas*, BRYANT, Pr. Bost. Soc. VII, 1839.

SP. CHAR. *Male*. Crown, nape, and upper half of the head black ; the lower half, including the ear-coverts, white, the separating line passing through the middle of the eye. Rest of upper parts grayish-ash, tinged with brown, and conspicuously streaked with black. Wing and tail-feathers brown, edged externally (except the inner tail-feathers) with dull olive-green. Two conspicuous bars of white on the wing-coverts, the tertials edged with the same. Under parts white, with a narrow line on each side of the throat from the chin to the sides of the neck, where it runs into a close patch of black streaks continued along the breast and sides to the root of the tail. Outer two tail-feathers with an oblique patch on the inner web near the end ; the others edged internally with white. *Female* similar, except that the upper parts are olivaceous, and, even on the crown, streaked with black ; the white on the sides and across the breast tinged with yellowish ; a ring of the same round the eye cut by a dusky line through it. Length of male, 5.75 ; wing, 3.00 ; tail, 2.25.

HAB. Eastern Province of all North America to Arctic Ocean ; Alaska ; Greenland ; Cuba, in winter (rare) ; Bahamas ; Bogota. Chile? Not recorded from intermediate localities.

The autumnal dress of young birds is very different from that of spring. The upper parts are light olive-green, obsoletely streaked with brown ; beneath greenish-yellow, obsoletely streaked on the breast and sides, the under tail-coverts pure white, a yellowish ring round the eye, and a superciliary one of the same color. In this dress it is scarcely possible to distinguish it from the immature *D. castanea*. The differences, as far as tangible, will be found detailed under the head of the latter species.

The young bird in its first dress is also quite different, again, from the autumnal-plumaged birds. The upper parts are hoary-grayish, the lower white ; each feather of the whole body, except lower tail-coverts, with a terminal bar or transverse spot of blackish, those on the upper parts approach-

ing the base of the feathers along the shaft. Wings and tail much as in the autumnal plumage.

HABITS. The appearance of this beautiful and familiar Warbler in New England is the sure harbinger of the summer. The last of the migrants that do not tarry, it brings up the rear of the hosts of hyperborean visitors. This species ranges over the whole extent of eastern North America, from Mexico to the Arctic seas. It has not been found farther west than the Great Plains and the Rio Grande. Wherever found it is abundant, and its lively and attractive manners and appearance render it a pleasing feature. It is not known to stop to breed in Massachusetts, but it lingers with us till the last blossom of the apple falls, and until the Bluebird and the Robin have already well-fledged broods, sometimes as late as the 10th of June, and then suddenly disappears.

Dr. Woodhouse found it abundant in Texas and the Indian Territory, and individuals have been procured in Missouri and Nebraska. It has been found abundant in the Arctic regions, around Fort Anderson, Fort Yukon, and Fort Good Hope. A single specimen was taken near Godthaab, Greenland, in 1853, as recorded by Professor Reinhardt. Dr. Bryant met with it in the Bahamas, in the spring of 1859, where it was abundant from the 1st to the 10th of May. He describes its habits as similar to those of the *Mniotilta varia*, climbing around the trunks of trees in search of insects with the same facility. Single specimens have been procured from Greenland on the northeast, and from Bogota and Cuba. Dr. Coues found it abundant in Labrador in all well-wooded situations, and describes it as a most expert fly-catcher, taking insects on the wing in the manner of the *Contopus virens*.

Mr. Allen has never noted the arrival of this bird in Western Massachusetts before the 20th of May, nor later than the 1st of June. They again become abundant the last of September, and remain into October. In Eastern Maine Mr. Boardman reports them abundant, and as remaining to breed. They are there more numerous about open pastures than most Warblers. They nest in low trees, about swampy places.

In Central Vermont, Mr. Paine states, the Black-Poll is the last of all the migrant birds that come from the South, and is seen only a few days in the first of June. It seldom stays more than a day or two, and then passes north. It appears singular that a bird coming so late should go yet farther north to breed. He states that its song consists only of a few low, hisping peeps. It may usually be seen wandering over fields in which there are a few scattered trees, and seems to be a very active, restless bird.

The writer also met with them in great abundance about Eastport, and in the islands of the Grand Menan group. It was the most common Warbler in that locality. The low swampy woods seemed filled with them, and were vocal with their peculiar love-notes.

Wilson states that he occasionally found this Warbler in Pennsylvania and New Jersey, and was confident they would be found to breed in those States,

but this has never been confirmed. He regarded it as a silent bird, and Mr. Audubon does not compliment its vocal powers. Yet it is a pleasing and varied, if not a powerful singer. Mr. Trippe speaks of its song as faint and lisping, and as consisting of four or five syllables.

None of our birds, before its history was well known, has been made the occasion for more ill-founded conjectures than the Black-Poll. Wilson was at fault as to its song and its Southern breeding, and imagined it would be found to nest in high tree-tops, so as not to be readily detected. Nuttall, on the other hand, predicted that it would be found to breed on the ground, after the manner of the *Mniotilta*, or else in hollow trees. Mr. Audubon, finding its nest in Labrador, indulges in flights of fancy over its supposed rarity, which, seen in the light of our present knowledge, as an abundant bird in the locality where his expedition was fitted out, are somewhat amusing. That nest was in a thicket of low trees, contained four eggs, and was placed about four feet from the ground, in the fork of a small branch, close to the main stem of a fir-tree. Its internal diameter was two inches, and its depth one and a half. It was formed, externally, of green and white moss and lichens, intermingled with coarse dry grasses. It was lined, with great care, with fine, dry, dark-colored mosses, resembling horse-hair, with a thick bed of soft feathers of ducks and willow grouse.

In passing north, these Warblers, says Audubon, reach Louisiana early in February, where they glean their food among the upper branches of the trees overhanging the water. He never met with them in maritime parts of the South, yet they are abundant in the State of New Jersey near the sea-shore. As they pass northward their habits seem to undergo a change, and to partake more of the nature of Creepers. They move along the trunks and lower limbs, searching in their chinks for larvæ and pupæ. Later in the season, in more northern localities, we again find them expert flycatchers, darting after insects in all directions, chasing them while on the wing, and making the clicking sound of the true Flycatcher.

They usually reach Massachusetts after the middle of May, and their stay varies from one, usually, to nearly four weeks, especially when their insect-food is abundant. In our orchards they feed eagerly upon the canker-worm, which is just appearing as they pass through.

Around Eastport and at Grand Menan they confine themselves to the thick swampy groves of evergreens, where they breed on the edges of the woods. All of the several nests I met with in these localities were built in thick spruce-trees, about eight feet from the ground, and in the midst of foliage so dense as hardly to be noticeable. Yet the nests were large and bulky for so small a bird, being nearly five inches in diameter and three in height. The cavity is, however, small, being only two inches in diameter, and one and a fourth to one and a half in depth. They were constructed chiefly of a collection of slender young ends of branches of pines, firs, and spruce, interwoven with and tied together by long branches of the *Cladonia* lichens,

slender herbaceous roots, and finer sedges. The nests were strongly built, compact and homogeneous, and were elaborately lined with fine panicles of grasses and fine straw. In all the nests found, the number of eggs was five.

It is a somewhat noticeable fact, that though this species is seen in New England only by the middle of May, others of its kind have long before reached high Arctic localities. Richardson records its presence at the Cumberland House in May, and Engineer Cantonment by the 26th of April. Mr. Lockhart procured a nest and five eggs at Fort Yukon, June 9. All the nests taken in these localities were of smaller size, were built within two feet of the ground, and all were much more warmly lined than were those from Grand Menan. In a few instances Mr. McFarlane found the nests of this species actually built upon the ground. This, however, is an abnormal position, and only occasioned by the want of suitable situations in protected localities. In one instance a nest was taken on the first of June, containing well-developed embryos. Yet this same species has frequently been observed lingering in Massachusetts a week or more after others of its species have already built their nests and begun hatching.

The eggs of this species measure .72 by .50 of an inch. Their shape is an oblong-oval. Their ground-color is a beautiful white, with a slight tinge of pink, when fresh. They are blotched and dotted over the entire surface with profuse markings of a subdued lavender, and deeper markings of a dark purple intermixed with lighter spots of reddish-brown. The usual number is five, though six are occasionally found in a nest.

***Dendroica castanea*, BAIRD.**

BAY-BREASTED WARBLER.

Sylvia castanea, WILS. Am. Orn. II, 1810, 97, pl. xiv, fig. 4. — BOX. ; NUTT. ; AUD. Orn. Biog. I, pl. lxix. *Sylvicola castanea*, SWAINS. ; JARD. ; RICH. ; BOX. ; AUD. Birds Am. II, pl. lxxx. *Rhinanphus castaneus*, CAB. *Dendroica castanea*, BAIRD, Birds N. Am. 1858, 276 ; Rev. 189. — SCLATER & SALVIN, Ibis, 1859, 11 (Guatemala). — CASSIN, Pr. A. N. Sc. 1860, 193 (Isthmus Darien ; winter). — LAWRENCE, Ann. N. Y. Lyc. 1861, 322 (Isthmus Panama ; winter). — SAMUELS, 228. *Sylvia autumnalis*, WILS. III, pl. xxiii, fig. 2. — AUD. Orn. Biog. I, pl. lxxxviii.

SP. CHAR. *Male*. Crown dark reddish-chestnut ; forehead and cheeks, including a space above the eye, black ; a patch of buff-yellow behind the cheeks. Rest of upper parts bluish-gray streaked with black, the edges of the interscapulars tinged with yellowish, of the scapulars with olivaceous. Primaries and tail-feathers edged externally with bluish-gray, the extreme outer ones with white ; the secondaries edged with olivaceous. Two bands on the wing and the edges of the tertials white. The under parts are whitish with a tinge of buff ; the chin, throat, forepart of breast, and the sides, chestnut-brown, lighter than the crown. Two outer tail-feathers with a patch of white on the inner web near the end ; the others edged internally with the same. *Female* with the upper parts olive, streaked throughout with black, and an occasional tinge of chestnut on the crown. Lower parts with traces of chestnut, but no stripes. Length of male, 5.00 ; wing, 3.05 ; tail, 2.40.

HAB. Eastern Province of North America to Hudson's Bay ; Guatemala, south to Isthmus of Darien. Not recorded from Mexico or West Indies.

The female and immature males of this species differ much from the spring males, and are often confounded with other species, especially with *D. striata*. A careful comparison of an extensive series of immature specimens of the two species shows that in *castanea* the under parts are seldom washed uniformly on the throat and breast with yellowish-green, but while this may be seen on the sides of the neck and breast, or even across the latter, the chin and throat are nearly white, the sides tinged with dirty brown, even if the (generally present) trace of chestnut be wanting on the sides. There is a buff tinge to the under tail-coverts ; the quills are abruptly margined with white, and there are no traces (however obsolete) of streaks on the breast. In *D. striata* the under parts are quite uniformly washed with greenish-yellow nearly as far back as the vent, the sides of the breast and sometimes of the belly with obsolete streaks ; no trace of the uniform dirty reddish-brown on the sides ; the under tail-coverts are pure white. The quills are only gradually paler towards the inner edge, instead of being rather abruptly white.

HABITS. The Bay-breasted Warbler is one of the many species belonging to this genus whose history is yet very imperfectly known. Everywhere quite rare, it is yet distributed from the Atlantic to the Great Plains, and from the Gulf of Mexico far into the Hudson Bay Territory. In the winter it is known to extend its migrations as far to the south as the northern portions of South America. It has not been traced to Mexico nor to the West India Islands, but has been procured by Mr. Salvin in Guatemala. Nearly all the specimens obtained in the United States have either been taken before the 12th of May or in the autumn, indicative of a more northern breeding-place. In Eastern Massachusetts it is exceedingly rare, passing through after the middle of May and returning in September. Mr. Maynard has obtained a specimen as late as June 19, which, though not necessarily proving that they breed there, indicates that the line of their area of reproduction cannot be distant. In the western part of the same State, Mr. Allen has found it from May 20 to the 25th, and has obtained one specimen in July. In Western Maine, Mr. Verrill has noted its occurrence from the middle of May to June, but it is very rare ; and Mr. Boardman reports the same for Eastern Maine, where it is a summer resident. He writes that he has several times shot specimens in the early summer, but that he could never find the nest. It is also given by Lieutenant Bland as one of the birds found in the vicinity of Halifax. It was not observed by any of the governmental exploring expeditions, nor found in Arizona by Dr. Coles. Mr. Lawrence has received specimens from Panama, obtained in winter, Mr. Cassin from Darien, and Mr. Selater from Guatemala.

This species so far eluded the notice of Mr. Audubon as to prevent him from giving any account of its habits. He only mentions its occasional

arrival in Pennsylvania and New Jersey early in April, and its almost immediate and sudden disappearance. He several times obtained them at that period, and yet has also shot them in Louisiana as late as June, while busily searching for food among the blossoms of the cotton-plant.

Wilson also regarded this species as very rare. He reports it as passing through Pennsylvania about the middle of May, but soon disappearing. He describes these birds as having many of the habits of Titmice, and displaying all their activity. It hangs about the extremity of the twigs, and darts about from place to place with restless diligence in search of various kinds of larvæ. Wilson never met with it in the summer, and very rarely in the fall.

Mr. Nuttall noticed this species passing through Massachusetts about the 15th of April. He regarded it as an active insect-hunter, keeping in the tops of the highest trees, darting about with great activity, and hanging from the twigs with fluttering wings. One of these birds that had been wounded soon became reconciled to its confinement, and greedily caught at and devoured the flies that were offered. In its habits and manners it seemed to him to greatly resemble the Chestnut-sided Warbler.

Mr. T. M. Trippe speaks of this Warbler as one of the last to arrive near Orange, N. Y. Owing to the fact that at that time the foliage is pretty dense, and that it makes but a short stay, it is not often seen. He speaks of it as not quite so active as the other Warblers, keeping more on the lower boughs, and seldom ascending to the tops of the trees.

Mr. C. W. Wyatt met with this species at Naranjo, in Colombia, South America.

Eggs of this bird obtained by Mr. George Bush at Coldwater, near Lake Superior, are of an oblong-oval shape, measuring .75 by .52 of an inch, and except in their superior size and fewer markings might be mistaken for eggs of *D. aestiva*. Their ground-color is a bluish or greenish white. The markings are very few and fine, except those in the crown around the larger end, and there the blotches are deeper and more numerous. Their colors are dark reddish-brown and purple.

Mr. Maynard found this species the most abundant of the *Sylvicolidæ* at Lake Umbagog, where it breeds. Two nests were taken in June. One was found June 3, in a tree by the side of a cart-path in the woods, just completed. It was built in the horizontal branch of a hemlock, twenty feet from the ground, and five or six from the trunk of the tree. By the 8th of June it contained three fresh eggs. The other was built in a similar situation, fifteen feet from the ground, and contained two fresh eggs.

These nests were large for the bird, and resembled those of the Purple Finch. They were composed outwardly of fine twigs of the hackmatack, with which was mingled some of the long hanging *Usnea* mosses. They were very smoothly and neatly lined with black fibrous roots, the seed-stalks of *Cladonia* mosses, and a few hairs. They had a diameter of about six inches,

and a height of about two and a half inches. The cavity was three inches wide and an inch and a quarter deep. The eggs varied in length from .71 to .65 of an inch, and in breadth from .53 to .50. Their ground-color was a bluish-green, thickly spotted with brown, and generally with a ring of confluent blotches of brown and lilac around the larger end. Occasionally the spots proved to be more or less of an umber-brown, and in some specimens the spots were less numerous than in others.

These birds were found in all the wooded sections of that region, where they frequented the tops of tall trees. Their song, he states, in its opening, is like that of the Black-Poll, with a terminal warble similar to that of the Redstart, but given with less energy.

Dendroica cærulescens, BAIRD.

BLACK-THROATED BLUE WARBLER.

Motacilla canadensis, LINN. Syst. Nat. I, 1766, 336 (not p. 334, which is *D. coronata*).
Sylvia canadensis, LATH. ; WILSON. — AUD. Orn. Biog. II, pl. cxlviii, clv. — SALLÉ.
 P. Z. S. 1857, 231 (St. Domingo). *Sylvicula canadensis*, SWAINSON. ; JARD. ; BON. ;
 AUD. Birds Am. II, pl. xcv. *Rhinanphus can.* CAB. *Dendroica canadensis*, BAIRD,
 Birds N. Am. 1858, 271. — IB. P. Z. S. 1861, 70 (Jamaica). — GUNDEL. Cab. Jour. 1861,
 326 (Cuba : very common). — SAMUELS, 224. *Motacilla cærulescens*, GM. S. Nat. I,
 1788, 960. *Sylvia cær.* LATH. ; VIEILL. II, pl. lxxx. — FÖRST. Sagra's Cuba, Ois.
 1840, 63, pl. ix, figs. 1, 2. *Dendroica cær.* BAIRD, Rev. Am. B. 1864, 186. *Sylvia*
pusilla, WILSON, V, pl. xliii, fig. 3 (Juv.). *Sylvia leucoptera*, WILSON. *Sylvia palustris*,
 STEPH. *Sylvia macropus*, VIEILL. *Sylvia sphagnosa*, BON. ; NUTTALL ; AUD. *Syl-*
vicola pinus, GOSSE, Birds Jam. 1847, 162 (female). — IB. Illust. no. 37.

SP. CHAR. Above uniform continuous grayish-blue, including the outer edges of the quill and tail-feathers. A narrow frontal line, the entire sides of head and neck, chin and throat, lustrous black ; this color extending in a broad lateral stripe to the tail. Rest of under parts, including the axillary region, white. Wings and tail black above, the former with a conspicuous white patch formed by the bases of all the primaries (except the first) ; the inner webs of the secondaries and tertiaries with similar patches towards the base and along the inner margin. All the tail-feathers, except the innermost, with a white patch on the inner web near the end. Length, 5.50 ; wing, 2.60 ; tail, 2.25.

FEMALE, olive-green above and dull yellow beneath. Sides of head dusky olive, the eyelids and a superciliary stripe whitish. Traces of the white patches at the base of the primaries and of the tail.

HAB. Eastern Province of United States ; Jamaica, Cuba, and St. Domingo in winter ; very abundant ; Bahamas (BRYANT). Not recorded from Mexico or Central America.

The white patch at the base of the primary, together with the total absence of outer markings on the wings, is peculiar to this species, and is found in both sexes. The female is more different from the male than that of any other species.

The plumage of the male in autumn is similar to the spring dress, but the back and wings are washed with greenish, and the black of the throat variegated with white edges to the feathers. A younger male (788,

October 10, Carlisle, Penn.) differs in having the black appearing in patches, the throat being mostly white; there is also a narrow white superciliary stripe.

HABITS. The Black-throated Blue Warbler, at different seasons of the year, is distributed over nearly the whole eastern portion of North America. Abundant in the West Indies in winter, as also in the South Atlantic States in early spring and late in fall, it is found during the breeding-season from Northern New York and New England nearly to the Arctic regions. A few probably stop to breed in the high portions of Massachusetts, and in late seasons they linger about the orchards until June. They undoubtedly breed in Vermont, New Hampshire, and Maine.

Dr. Woodhouse states that he found it abundant in Texas; but this is the only instance, so far as is known, of its occurring west of the Mississippi Valley.

Towards the close of the remarkably mild winter of 1866, a pair of these birds were observed for several days in a sheltered portion of Boston. They were in excellent condition, and were very busily employed hunting for the larvæ and eggs of insects and spiders in the corners and crevices of the walls of houses and out-buildings, evidently obtaining a full supply. In Southern Illinois, Mr. Ridgway cites this Warbler as one of the least common of the spring and fall visitants.

Audubon found this species in nearly every Southern and Southwestern State during their migrations. They arrive in South Carolina late in March, are most abundant in April, and leave early in May. They keep in the deep woods, passing among the branches about twenty feet from the ground. He traced them as far north as the Magdaine Islands, but found none in Newfoundland, and but a single specimen in Labrador. They breed in Nova Scotia, and a nest was given him found near Halifax by Dr. MacCulloch. These were said to be usually placed on the horizontal branch of a fir-tree, seven or eight feet from the ground, and to be composed of fine strips of bark, mosses, and fibrous roots, and lined with fine grasses and a warm bed of feathers. The eggs, five in number, were white, with a rosy tint, and sprinkled with reddish-brown dots, chiefly at the larger end.

This Warbler is an expert catcher of the smaller winged insects, pursuing them quite a distance, and, when seizing them, making the clicking sound of the true Flycatcher. So far as they have been observed, they have no song, only a monotonous and sad-sounding *cheep*.

Nuttall, in the second edition of his Manual, mentions having observed several pairs near Farranville, Penn., on the Susquehanna, and among the Alleghanies. It was in May, and in a thick and shady wood of hemlock. They were busy foraging for food, and were uttering what he describes as slender, wiry notes.

In Western Massachusetts, Mr. Allen states it to be common from the 15th to the 25th of May, and again in September. They were found by Mr. C. W.

Bennett on Mount Holyoke during the breeding-season, and by Mr. B. Horsford on the western ridges during the same period. They are common, Mr. Boardman states, in the thick woods about Calais, through all the breeding-season.

In Jamaica, during the winter, it exclusively frequents the edges of tall woods in unfrequented mountainous localities. They are found in that island from October 7 until the 9th of April. Mr. Gosse, who has closely observed their habits during winter, speaks of their playing together with much spirit for half an hour at a time, chasing each other swiftly round and round, occasionally dodging through the bushes, and uttering at intervals a pebbly *chirp*. They never remain long alighted, and are difficult to kill. Restlessness is their great characteristic. They often alight transversely on the long pendent vines or slender trees, hopping up and down without a moment's intermission, pecking at insects. They are usually very plump and fat.

De la Sagra states that this bird occasionally breeds in Cuba, young birds having been killed that had evidently been hatched there. The record of this Warbler, as presented by different authors, is apparently inconsistent and contradictory: rare with some observers, abundant with others; remaining in Jamaica until well into April, yet common in South Carolina in March, and even appearing in Massachusetts in midwinter; supposed to breed in the highlands of Cuba, yet, except in the case of the nest taken near Halifax, its manner of breeding was unknown until lately. It is probably rare in lowlands everywhere, and nowhere common except among mountains, and, while able to endure an inclement season where food is abundant, is influenced in its migratory movements by instinctive promptings to change its quarters entirely in reference to a supply of food, and not by the temperature merely. Its presence in Boston in winter was of course a singular accident; but its plump condition, and its contented stay so long as its supply of food was abundant, sufficiently attested its ability to endure severe weather for at least a limited period, and while its food was not wanting. Mr. Tripp states that these birds reach Northern New Jersey during the first week of May, and stay a whole month, remaining there longer than any other species. At first they have no note but a simple chirp; but, before they leave, the males are said to have a singular drawling song of four or five notes.

Mr. Paine states that this Warbler is a resident, but not very common bird, in Randolph, Vt. He has usually noticed it in the midst of thick woods, not generally in tall trees, but among the lower branches or in bushes. The song he describes as very short and insignificant, its tones sharp and wiry, and not to be heard at any great distance. He knows nothing as to its nest. They arrive at Randolph from the South about the middle of May.

We are indebted to Mr. John Burroughs for all the knowledge we possess in relation to the nest and eggs of this species, which had previously baffled the search of other naturalists. He was so fortunate as to meet with their nest in the summer of 1871. Early in July, in company with his

nephew, Mr. C. B. Deyoe, Mr. Burroughs visited the same woods, in Roxbury, Delaware County, N. Y., in which he had in a previous year found the nest of the Mourning Ground Warbler. The trees were mostly hemlock, with an undergrowth of birch and beech. They first noticed the parent birds with food in their bills, and then set about deliberately to find their nest by watching their movements. But the birds were equally vigilant, and watched them quite as determinedly. "It was diamond cut diamond." They were so suspicious, that, after loading their beaks with food, they would swallow it themselves, rather than run the risk of betraying their secret by approaching the nest. They even apparently attempted to mislead them by being very private and confidential at a point some distance from the nest. The two watched the birds for over an hour, when the mosquitoes made it too hot for them to hold out any longer, and they made a rush upon the ground, determined to hunt it over inch by inch. The birds then manifested the greatest consternation, and when, on leaping over an old log, the young sprang out with a scream, but a few feet from them, the distracted pair fairly threw themselves under their very feet. The male bird trailed his bright new plumage in the dust; and his much more humbly clad mate was, if anything, more solicitous and venturesome, coming within easy reach. The nest was placed in the fork of a small hemlock, about fifteen inches from the ground. There were four, and perhaps five, young in the nest, and one egg unhatched, which, on blowing, proved to have been fresh.

The nest measures three and a half inches in diameter, and a trifle more than two in height. The cavity is broad and deep, two and a third inches in diameter at the rim, and one and a half deep. Its base and periphery are loose aggregations of strips of decayed inner bark from dead deciduous trees, chiefly basswood, strengthened by fine twigs, rootlets, and bits of wood and bark. Within this is a firm, compact, well-woven nest, made by an elaborate interweaving of slender roots and twigs, hair, fine pine-needles, and similar materials.

The egg is oval in shape, less obtuse, but not pointed, at one end, with a grayish-white ground, pinkish when unblown, and marked around the larger end with a wreath, chiefly of a bright umber-brown with lighter markings of reddish-brown and obscure purple. A few smaller dottings of the same are sparingly distributed over the rest of the egg. Its measurements are .70 by .50 of an inch. It more nearly resembles the eggs of the *D. maculosa* than any other, is about five per cent larger, a little more oblong, and the spots differ in their reddish and purplish tinge, so far as one specimen may be taken as a criterion.

Dendroica olivacea, SCLAT.**OLIVE-HEADED WARBLER.**

Sylvia olivacea, GIRARD, Birds Texas, 1841, 14, pl. vii, fig. 2. — SCLATER, P. Z. S. 1855, 66. *Sylvicola olivacea*, CASSIN, Ill. Birds Texas, etc. 1855, 283, pl. xlviii. *Rhinanthus olivaceus*, SCLATER, P. Z. S. 1856, 291 (Cordoba). *Dendroica olivacea*, SCLATER, P. Z. S. 1858, 298 (Oaxaca; cold region). — Ib. P. Z. S. 1859, 363 (Jalapa). — Ib. Catal. 1861, 31, no. 190. — BAIRD, Rev. Am. B. 1864, 205. *Sylvia tamiata*, DUBUS, Bull. Acad. Brux. XIV, 1847, 104. — Ib. Rev. Z. 1848, 245. *Sylvicola tamiata*, BOS. Consp. 1850, 309.

SP. CHAR. Head and neck all round, with jugulum, brownish-saffron, with a greenish tinge on the nape. Rest of upper parts ashy. Middle and tips of greater wing-coverts white, forming two bands on the wing; a third white patch at the bases of the primaries (except the outer two), and extending forwards along the outer edges. Secondaries edged externally with olive-green. Inner webs of quills conspicuously edged with white. Under parts, except as described, white, tinged with brownish on the sides; a narrow frontal band, and a broad stripe from this through eye and over ear-coverts, black. Outer tail-feather white, except at base and towards tip; greater portion of inner web of next feather also white, much more restricted on the third. Length, 4.60; wing, 2.88; tail, 2.15; tarsus, .75.

A female specimen (14,369), perhaps also in autumnal plumage, has the saffron replaced by clear yellowish, except on the top of head and nape, which are olive-green. The black frontal and lateral bands are replaced by whitish, leaving only a dusky patch on the ears.

HAB. Mexico (both coasts to the southward); Guatemala.

This species is given by Mr. Girard as occurring in Texas, but it is possible that he may have been misled as to the true locality. It may, however, be yet detected along the southern border of the United States.

Nothing is known of its habits.

Dendroica nigrescens, BAIRD.**BLACK-THROATED GRAY WARBLER.**

Sylvia nigrescens, TOWNSEND, J. A. N. Sc. VII, ii, 1837, 191 (Columbia River). — AUD. Orn. Biog. V, 1839, 57, pl. cccxv. *Perisoreus nig.* BOS.; NEIT. *Sylvicola nig.* AUD. Birds Am. II, pl. xciv. *Rhinanthus nig.* CAB. 1850. *Dendroica nig.* BAIRD, Birds N. Am. 1858, 270; Rev. 186. — SCLATER, P. Z. S. 1858, 298; 1859, 374 (Oaxaca; high mountains in March). — HEERMANN, P. B. R. Rep. X, iv, 40. — COOPER & SICKLEY, P. B. R. Rep. XII, ii, 1859, 180. — COOPER, Orn. Cal. I, 1870, 90. *Sylvia hulsei*, GIRARD, Birds Texas, 1838, pl. iii, fig. 1, ♀ (suggested by Sclater).

SP. CHAR. Head all round, forepart of the breast, and streaks on the side of the body, black; rest of under parts a stripe on the side of the head, beginning acutely just above the middle of the eye, and another parallel to it, beginning at the base of the under jaw (the stripes of opposite sides confluent on the chin), and running further back, white. A yellow spot in front of the eye. Rest of upper parts bluish-gray. The interscapular region and upper tail-coverts streaked with black. Wing-coverts black, with two narrow white bands; quills and tail-feathers brown, the two outer of the latter white, with the shafts and a terminal

streak brown; the third brown, with a terminal narrow white streak. Bill black; feet brown. Length, 4.70; wing, 2.30; tail, 2.10.

HAB. Western and Middle Provinces of United States. Migratory southward into Western Mexico (Oaxaca); Orizaba (winter, SEMICHRIST).

Female (53,373, East Humboldt Mountains, Nev., July 14). Similar to the male, but crown ash medially streaked with black, instead of continuous black; the streaks on back narrow and inconspicuous; the black of the throat confined to the jugulum, appearing in spots only on anterior half. A young female (No. 53,376, East Humboldt Mountains, August 10) is plain brownish-ash above, lacking entirely the streaks on the back, and those on sides of crown extremely obsolete. There is no black whatever on throat or jugulum, which, with the well-defined supra-oral stripe and lower parts in general, are soiled white, more brownish laterally. The other features, including the yellow spot over the lores, with the wing and tail markings, are much as in the adult. A young male (53,375), same locality and date, differs from the last in having the sides of the crown black, and the throat-patch almost complete, but much hidden by the broad white borders to the feathers. An adult autumnal male (7,690, Calaveras River) is like the spring adult, but the ash is overspread by brownish, nearly obliterating the dorsal streaks, and dividing the black of the crown; the black throat-patch is perfectly defined, but much obscured by white borders to the feathers.

HABITS. The Black-throated Gray or Dusky Warbler, so far as is now known, belongs to the Western and Middle Provinces, occurring certainly as far to the south as San Diego, in California, and as far to the north as Fort Steilacoom, in Washington Territory, penetrating in winter into Mexico. The most easterly localities in which it has been met with are in Arizona and New Mexico. The Smithsonian Institution has received specimens also from Columbia River, Calaveras, Cal., and Fort Defiance.

This species was first obtained and described by Mr. Townsend, who found it abundant in the forests of the Columbia, where it breeds and remains until nearly winter. Its nest, which he there met with, resembles that of *Parula americana*, only it is made of the long and fibrous green moss, or *Usnea*, peculiar to that region, and is placed among the upper branches of oak-trees, suspended between two small twigs.

Mr. Nuttall states that it arrives on the Columbia early in May, and from the manner in which its song was delivered at intervals, in the tops of deciduous trees, he had no doubt that they were breeding in those forests as early as May 23. This song he describes as delicate, but monotonous, uttered as it busily and intently searches every leafy bough and expanding bud for insects and their larvæ in the spreading oak, in which it utters its solitary notes. Its song is repeated at short and regular intervals, and is said by Mr. Nuttall to bear some resemblance to *t-shee-tshāy-tshaitshēe*, varying the feeble sound very little, and with the concluding note somewhat slenderly and plaintively raised. Dr. Suckley speaks of this bird as moderately abundant

near Fort Steilacoom, generally met with on oaks, and very much resembling *Dendroica auduboni* in its habits. Its arrival there he gives as occurring in the first week in April, or a month earlier than stated by Nuttall.

Dr. Cooper met with a pair at Puget Sound that appeared to have a nest, though he sought for it in vain. He describes its note as faint and unvaried.

Dr. Cones met with this Warbler in the vicinity of Fort Whipple, Arizona. He speaks of it as common there as a spring and autumn migrant. He thinks that a few remain to breed. It arrives in that Territory about April 20, and is found until late in September. It is most common among the pine-trees, and in its general habits is stated to resemble the new species *D. gracia*.

Dr. Heermann found a few birds of this species near Sacramento, and also on the range of mountains dividing the Calaveras and the Mokelumne Rivers. During the survey by Lieutenant Williamson's party, Dr. Heermann met with a single specimen among the mountains, near the summit of the Tejon Pass. It was in company with other small birds, migrating southward, and gleaning its food from among the topmost branches of the tallest oaks. He states that its notes closely resemble the sounds of the locust.

Dr. Cooper states that these birds appear at San Diego by the 20th of April, in small flocks migrating northward, and then uttering only a faint chirp. They frequent low bushes along the coast, but as they proceed farther north they take to the deciduous oaks as the leaves begin to expand, early in May, at which time they reach the Columbia River. He has never met with any in California after April.

Mr. Ridgway observed this species only in the pine and cedar woods of the East Humboldt Mountains, where, in all probability, they were breeding. He observed numerous families of young birds following their parents in the months of July and August. He met with them only among the cedars and the woods of the nut-pine, and never among the brushwood of the cañons and ravines. He states that the common note of this bird greatly resembles the sharp chirp of the *Dendroica coronata*, and is louder and more distinct than that of *D. auduboni*.

Mr. A. Boucard obtained specimens of these birds at Oaxaca, Mexico, during the winter months.

Dendroica chrysopareia, SCL. & SALV.

YELLOW-CHEEKED WARBLER.

Dendroica chrysopareia, SCLATER & SALVIN, P. Z. S. 1860, 298. — Ib. 1861, 273 (Veracruz, Guatemala). — Ib. 1865. — DRESSER, 1865, 477. — BAIRD, Rev. Am. B. 1864, 183. — COOPER, Orn. Cal. I, 1870, 93.

SP. CHAR. (229 Salvin collection.) Head and body above black, the feathers with olive-green edges, especially on the back, obscuring the ground-color; rump clear black. Entire side of head (extending to nostrils and on lower jaw), and the partially concealed bases of the feathers on the median line of the forehead, yellow, with a narrow black line

from lores, through the eye, widening behind, but not crossing through the yellow. Beneath, including inside of wings, white: a large patch of black covering the chin and throat, and occupying the entire space between the yellow patches of the two sides of the head and neck, and extended along the sides in a series of streaks. Feathers of crissum with black centres. Wings above ashy, with two white bands across the coverts, the scapulars streaked with blackish; first quill edged externally with white, the rest with gray. Tail-feathers blackish, edged externally with ashy, the lateral with white at the base. Outer tail-feather white on the inner web, except a stripe along the shaft near the end; second similar, but the white not reaching so far towards the base; third with a short patch of white in the end. Bill and legs brownish-black. Bill unusually thick. Length, 4.50; wing, 2.50; tail, 2.40; tarsus, 2.75.

HAB. Vera Paz, Guatemala; San Antonio, and Medina River, Texas. (HEERMANN and DRESSER.)

The capture of specimens of this species at San Antonio, Texas, by Dr. Heermann, and on the Medina River by Mr. Dresser, entitles it to a place in our fauna. The specimen described above is Mr. Salvin's type.

HABITS. A single specimen is said to have been taken near San Antonio, Texas, by Dr. Heermann. It is thought to be probably a bird belonging to the fauna of Arizona and New Mexico, and is given hypothetically by Dr. Cooper among the birds of California. In its appearance it resembles *D. virens*, *D. townsendii*, and *D. occidentalis*. It was originally described by Salvin from a single specimen obtained in Guatemala. Another pair was afterward obtained by Mr. Salvin on the highest point of the road between Salama and Tactic. In regard to its habits, nothing is on record.

***Dendroica virens*, BAIRD.**

BLACK-THROATED GREEN WARBLER.

Motacilla virens, GMELIN, Syst. Nat. I, 1788, 985. *Sylvia virens*, LATH.: VIEILLOT; WILS. II; NUTT.; BON.; AUD. Orn. Biog. IV, pl. cccxcix. — GÄTKE, Naumannia, 1858, 423 (Heligoland, Europe, an original description). *Sylvicola virens*, SW.: AUD. Birds Am. II, pl. lxxxiv. — REINHARDT, Vid. Med. for 1853, 1854, 72, 81 (Greenland). *Rhinanphus virens*, CAB. Mus. Hein. Jour. III, 1855, 474 (Cuba; winter). — SCLATER, P. Z. S. 1856, 291 (Cordova). *Dendroica virens*, BAIRD, Birds N. Am. 1858, 267; Rev. 182. — SCLATER & SALVIN, Ibis, 1859, 1 (Guatemala). — SCLATER, P. Z. S. 1859, 363 (Oaxaca?); 373 (Xalapa); Ibis, 1865, 89. — LAWRENCE, Ann. N. Y. Lyc. VII, 1861, 293 (Panama). — GUNDEL, Cab. Jour. 1861, 326 (Cuba). — DRESSER, Ibis, 1865, 232. — SAMUELS, 222. *Mniotilta virens*, REINHARDT, Ibis, III, 1861, 5 (Julianhaab, Greenland).

SP. CHAR. *Male*. Upper parts, exclusive of wing and tail, clear yellow olive-green; the feathers of the back with hidden streaks of black. Forehead and sides of head and neck, including a superciliary stripe, bright yellow. A dusky olive line from the bill through the eye, and another below it. Chin, throat, and forepart of the breast, extending some distance along on the sides, continuous black; rest of under parts white, tinged with yellow on the breast and flanks. Wings and tail-feathers dark brown, edged with bluish-gray; two white bands on the wing: the greater part of the three outer tail-feathers white. *Female* similar, but duller; the throat yellow; the black of breast much con-

cealed by white edges; the sides streaked with black. Length, 5 inches; wing, 2.58; tail, 2.30.

HAB. Eastern Province of United States; Greenland; Heligoland, Europe; south to Panama R. R. In Mexico, Nidapa, Cordova, and Oaxaca? Cuba alone in West Indies. Mexico (everywhere in winter, SEMICURAST).

The autumnal male has the black of throat and breast obscured by whitish tips. Females are yellowish-white beneath, tinged with grayish towards the tail.

As shown in the generic chapter, *D. virens* is the type of a section of olivaceous Warblers with black chin and throat. The following more elaborate diagnoses of the group may facilitate its study, the species being quite closely related:—

COMMON CHARACTERS. Upper parts more or less olivaceous-green, with the feathers streaked centrally with black (sometimes concealed). Sides of head yellow. Chin and throat black; rest of the under parts, including inside of wings, white, with or without yellow on breast. Wings with two white bands. Inner web of lateral tail-feather almost entirely white from the base.

Above bright olive-green with concealed black streaks; tail-coverts ashy. Sides conspicuously streaked with black; crissum unspotted. Jugulum sometimes faintly tinged with yellowish. An obscure dusky-olive stripe through the eye, and a crescentic patch of the same some distance beneath it . . . *virens*.

Above olivaceous-ashy (rump pure ash), with more distinct black spots. Top and sides of head clear yellow, the feathers of the crown tipped with black, or clouded with dusky plumbeous. No dark markings or stripes on side of head. No distinct black streaks beneath; black of throat restricted to front of neck . . . *occidentalis*.

Prevailing color of upper parts black, with olivaceous edgings on the back; rump and upper tail-covert pure black. Sides and crissum streaked with black. A simple black stripe through the eye; no patch beneath it . . . *chrysoparia*.

Above olive-green. Upper tail-coverts ashy, with central black streaks. Feathers of head above black, with olive-green edges. A broad olivaceous black stripe through eye from lores, involving the ears, in which is a yellowish crescentic patch below the eye. Black feathers of throat and chin edged with yellow. Jugulum and sides of breast also yellow. Sides streaked with black. No distinct black streaks on crissum . . . *townsendii*.

HABITS. — The Black-throated Green Warbler, like nearly all the members of this highly interesting genus, has, to a very great degree, escaped the closer observations of our older ornithologists. Wilson only noticed it as it passed through Pennsylvania in its early spring migrations. He mentions its frequenting the higher branches of forest trees in search of the larvae of the smaller insects that feed upon the opening buds, and describes it as a lively, active bird, having only a few chirping notes. All had passed on by the 12th of May. Their return he was never able to notice, and he became afterwards satisfied that a few remained all the summer in the higher grounds of that State, having obtained several in June, 1809.

Audubon met with this bird from Newfoundland to Texas, but never found

it breeding. Nowhere abundant, there were large tracts of country where he never met with it, or where it was of rare occurrence. He found it most abundant in the vicinity of Eastport, Me. He also met with it during summer, in New England generally, Northern Pennsylvania, and New York, but not in Labrador. He describes its habits as a mingling of those of the Warblers and of the Vireo, and its notes as resembling those of the latter. In its search for food he found it quite regardless of the near presence of man. In its spring migrations it passes through the woods usually in pairs, in the fall reappearing in flocks of six or seven. In breeding it occurs only in single pairs, and each pair appropriates to itself a large tract of territory within which no other is usually found. After October, all have passed beyond the limits of the United States.

During the winter months it appears to be quite common in different parts of Mexico and Central America. In the large collection of Guatemalan skins collected by Dr. Van Patten, and purchased by the Boston Natural History Society, this bird was one of the most abundant of the migratory species. Specimens were taken by Mr. Boucard at Playa Vicente, in the hot country of Oaxaca, Mexico.

Dr. Woodhouse found this Warbler common in the Indian Territory and in Texas, and Lieutenant Couch met with it in Tamaulipas, Mexico, in March, 1853. With these exceptions it has not been observed in any of the government surveys, or found west of the valley of the Rio Grande. Besides the points named, it has been obtained in Ohio, Illinois, Missouri, and in the West Indies, in Central and in the northern portions of South America. Reinhardt gives it as accidental in Greenland. A single stray specimen was obtained in Heligoland, Europe, October 19, 1858.

Mr. Paine, of Randolph, Vt., notes the arrival of this bird about the 10th of May. He speaks of it as a very sweet singer, and as usually seen in the tops of tall trees, the hemlock being its favorite resort. There it chants its sweet sad notes through even the heat of the day. It continues in song nearly throughout the summer. Later in the season it frequents the open fields, in which it is seldom seen in the breeding-season. Its food, which it catches on the wing in the manner of Vireos, consists of the smaller winged insects, caterpillars, and other larvæ. In the fall, according to Mr. Audubon, it feeds upon various kinds of small berries.

It reaches Massachusetts the first of May, and is most numerous about the 15th, when the larger proportion pass farther north. In Western Maine, Professor Verrill states it to be a summer but not a common visitant; and near Calais, Mr. Boardman has found it breeding, but does not regard it as at all common, though in the year 1867 he found it quite abundant in the thick woods in that neighborhood during its breeding-season. Dr. Bryant also speaks of it as one of the most common of the Warblers observed by him near Yarmouth, N. S. A single specimen was taken at Julianhaab, Greenland, in 1853, and sent to the Royal Museum of Copenhagen.

In the vicinity of Boston, especially in the high grounds of Norfolk and Essex Counties, it is a not uncommon species, and its nests are found in certain favorite localities. Nuttall regards May 12 as the average of their first appearance. Busy, quiet, and unsuspicious of man, they were seen by him, collecting, in early October, in small groups, and moving restlessly through the forests preparatory to departing south. June 8, 1830, he found a nest of this species in a solitary situation among the Blue Hills of Milton, Mass. The nest was in a low and stunted juniper (a very unusual location). As he approached, the female remained motionless on the edge of the nest, in such a manner as to be mistaken for a young bird. She then darted to the ground, and, moving away expertly, disappeared. The nest contained four eggs, which he describes as white inclining to flesh-color, variegated at the larger end with pale purplish points interspersed with brown and black. The nest was formed of fine strips of the inner bark of the juniper, and tough white fibrous bark of other plants, lined with soft feathers and the slender tops of grass. The male bird was singing his simple chant, resembling the syllables *tē-dē-tēritsé-a*, pronounced loud and slow, at the distance of a quarter of a mile from the nest. He describes his song as simple, drawling, and plaintive. He was constantly interrupting his song to catch small flies, keeping up a perpetual snapping of his bill.

Several nests of this bird, given me by Mr. George O. Welch of Lynn, have been found by him in high trees in thick woods on the western borders of that city. They are all small, snug, compact structures, built on a base of fine strips of bark, bits of leaves, and stems of plants. The upper rims are a circular intertwining of fine slender twigs, interwoven with a few fine stems of the most delicate grasses. The inner portions of these nests are very softly and warmly bedded with the fine down and silky stems of plants. They have a diameter of three and a quarter inches, and a height of one and a half. The cavity is two inches in diameter, and one and a half in depth. The eggs measure .70 by .50 of an inch, have a white or purplish-white ground, and are blotched and dotted with markings of reddish and purplish brown, diffused over the entire egg, but more numerous about the larger end. One end is much more pointed than the other.

Dendroica townsendi, BAIRD.**TOWNSEND'S WARBLER.**

Sylvia townsendi, "NUTTALL," TOWNSEND, J. A. N. Sc. VII. II, 1837, 191. — AUD. Orn. Biog. V, 1839, pl. cccxciii. *Sylvicola t.* BON. ; AUD. Birds Am. II, 1841, pl. xcii. *Dendroica t.* BAIRD, Birds N. Am. 1858, 269 ; Rev. 185. — SCLATER, P. Z. S. 1858, 298 (Oaxaca ; high lands in winter) ; 1859, 374 (Totontepec ; winter) ; Ibis, 1865, 89. — SCLATER & SALVIN. Ibis, 1859, 11 (Guatemala). — COOPER & SUCKLEY, P. R. R. XII, II, 1859, 179 (Cal.). — TURNBULL, Birds of East Penn., etc. 1869, 42. — SUNDEVALL, Ofvers. 1869, 610 (Sitka). — COOPER, Orn. Cal. I, 1870, 91.

SP. CHAR. *Spring male*. Above bright olive-green ; the feathers all black in the centre, showing more or less as streaks, especially on the crown, where the black predominates. Quills, tail, and upper tail-covert feathers dark brown, edged with bluish-gray ; the wings with two white bands on the coverts ; the two outer tail-feathers white with a brown streak near the end ; a white streak only in the end of the third feather. Under parts as far as the middle of the body, with the sides of head and neck, including a superciliary stripe and a spot beneath the eye, yellow ; the median portion of the side of the head, the chin and throat, with streaks on the sides of the breast, flanks, and under tail-coverts, black ; the remainder of the under parts white. Length, 5 inches ; wing, 2.65 ; tail, 2.25.

Spring female. Resembling the male, but the black patch on the throat replaced by irregular blotches upon a pure yellow ground.

HAB. Western Province of United States, north to Sitka ; Mexico, into Guatemala. Migratory. Accidental near Philadelphia.

The autumnal adult male is much like the spring female, but the black throat-patch is perfectly defined, though much obscured by the yellow edges of the feathers, instead of broken into small blotches. The young male in autumn is similar in general appearance, but there are no streaks above, except on the crown, where they are mostly concealed ; the stripe on side of head is olivaceous, instead of black ; and nearly all the black on the throat is concealed.

A fine adult male of this species was taken near Philadelphia, Penn., in the spring of 1868, and is now in the collection of the late W. P. Turnbull, Esq., of that city.

HABITS. In regard to the habits of this very rare Western Warbler very little is as yet positively known, and nothing whatever has been ascertained as to its nesting or eggs. The species was first met with by Mr. Townsend, October 28, 1835, on the banks of the Columbia River, and was named by Mr. Nuttall in honor of its discoverer. It is spoken of by these gentlemen as having been a transient visitor only, stopping but a few days, on its way north, to recruit and feed, previous to its departing for the higher latitudes in which it spends the breeding-season. It is, however, quite as probable that they disperse by pairs into solitary places, where for a while they escape observation. When the season again compels them to migrate, they reappear on the same path, only this time in small and silent flocks, as they slowly move toward their winter quarters. These birds also are chiefly to be found

in the tops of the loftiest firs and other evergreens of the forests, where it is almost impossible to procure them.

Dr. Cooper observed one of this species at Shoalwater Bay, December 20, 1854. It was in company with a flock of Titmice and other small birds. The following year, in November, he saw a small flock in California, frequenting the willows in a low wet meadow, and was so fortunate as to procure a pair.

Ridgway met with it in the East Humboldt Mountains, where it was rather common in September, inhabiting the thickets of aspens, alders, etc., along the streams.

Mr. P. L. Selater obtained several fine specimens of this Warbler from the west coast of Central America, and Mr. Salvin found it a winter visitant at Duenas, where he met with it even more frequently than the *Dendroica virens*, with which he found it associated. Skins were found among the birds taken by Dr. Van Patten in Guatemala. A single specimen has been taken in Pennsylvania.

Mr. A. Boucard obtained specimens of this species in the mountainous district of Totontepec, in the State of Oaxaca, Mexico.

Dendroica occidentalis, BAIRD.

WESTERN WARBLER.

Sylvia occidentalis, TOWNSEND, J. A. N. S. VII, 11, 1837, 190 (Columbia River). — IB. Narrative, 1839, 340. — AFD. Orn. Biog. V, pl. lv. *Sylvia occ.* BON. ; AFD. Birds Am. II, pl. xciii. *Dendroica occ.* BAIRD, Birds N. Am. 1858, 268; Rev. 183. — COOPER & SICKLEY, R. R. Rep. XII, 11, 1859, 178 (N. W. coast). — COOPER, Orn. Cal. I, 1870, 92. *Dendroica chrysoparia*, SELATER, P. Z. S. 1862, 19 (La Parada, Mex.) (not of P. Z. S. 1860, 19); Ibis, 1865, 89; 1866, 191. *Dendroica nivicentris*, SALVIN, P. Z. S. May 26, 1863, 187, pl. xxiv, fig. 2 (Guatemala).

SP. CHAR. *Spring male*. Crown with sides of the head and neck continuous bright yellow, feathers of the former edged narrowly with black; rest of upper parts dark brown, edged with bluish-gray, so much so on the back and rump feathers as to obscure the brown, and with an olivaceous shade. Chin, throat, and forepart of breast tending convexly behind in a suberescence outline, with the nape, black; rest of under parts white, very faintly streaked on the sides with black. Two white bands on the wing, two outer tail-feathers, and the terminal portion of a third, white; the shafts, and an internal streak towards the end, dark brown. Bill jet-black; legs brown. Length, 1.70; wing, 2.70; tail, 2.30.

Spring female. Similar, but duller gray above; the yellow of the head less extended, and the throat whitish spotted with dusky.

HAB. Western Province of United States and Mexico (Moyapam, winter, SUMICHRAST) to Guatemala. Not seen at Cape St. Lucas.

An autumnal adult male (30,681, Guatemala, December, received from Mr. Salvin, and a type specimen of his "*nivicentris*") is much like the spring male, having the throat wholly black, the feathers, however, faintly margined

with whitish; there are no black spots on the crown, but, instead, an olivaceous stain; the nape is olivaceous instead of black, and the black centres to dorsal feathers more concealed; the ash above is less pure, and there is no trace of streaks on the sides. A female (autumnal?) — 38,141 — from Orizaba, Mexico, is grayish-olivaceous above, including the whole top of the head, except beneath the surface; the feathers on top of head have conspicuous black centres, but there are none on the back; the sides of the head, and the bases of the feathers on its top, are soiled yellow; the throat is dirty white, with the feathers dusky beneath the surface; the breast and sides have a strong brownish tinge. Another female, and an autumnal one (probably of the year), is more brown above, the specks on the top of the head exceedingly minute; there are also obscure streaks along the sides, where there is a strong brownish tinge.

HABITS. The Western or Hermit Wood Warbler, so far as known, is limited in its distribution to the Pacific coast from Central America to Washington Territory. Specimens procured from Volcan de Fuego, Mexico, Arizona, and California, are in the collection of the Smithsonian Institution. But little is positively known as to its history or habits. Nuttall, who first met with it in the forests on the banks of the Columbia, had no doubt that it breeds in the dark forests bordering on that river. He described it as a remarkably shy and solitary bird, retiring into the darkest and most silent recesses of the evergreens, and apparently living among the loftiest branches of the gigantic firs of that region. In consequence of its peculiar habits it was with extreme difficulty that his party could get a sight of this retiring species. Its song, which he frequently heard from these high tree-tops at very regular intervals for an hour or two at a time, he describes as a faint, moody, and monotonous note, delivered when the bird is at rest on some lofty twig, and within convenient hearing of its mate.

Mr. Townsend, who was one of the same party, shot a pair of these birds near Fort Vancouver, May 28, 1835. They were flitting among the tops of the pine-trees in the depths of the forest, where he frequently saw them hanging from the twigs, in the manner of Titmice. Their notes, uttered at different intervals, he describes as very similar to those of the Black-throated Blue Warbler (*D. cerulea*).

Dr. Suckley obtained, June, 1856, two specimens at Fort Steilacoom. He also describes them as very shy, feeding and spending most of their time in the tops of the highest firs, so high up as to be almost out of the reach of fine shot. The species he regards as not at all rare on the Pacific coast, but only difficult of procuring, on account of the almost inaccessible nature of its haunts.

Dr. Coues procured a single specimen of this species in Arizona early in September. It was taken in thick scrub-oak bushes. He thinks it may be a summer resident of that Territory, but, if so, very rare.

A single specimen was also obtained at Petuluma, Cal., by Mr. Emanuel Samuels, May 1, 1856.

It was also observed, August 29, by Mr. Ridgway, among the bushes of a cañon among the East Humboldt Mountains. He describes its single note as a lisped *peet*.

Three individuals of this species were collected by Mr. Boucard in Southern Mexico in 1862, and were referred by Dr. Selater to *D. chrysopaia* (P. Z. S., 1862, p. 19). Subsequently Mr. Salvin described as a new species, under the name of *D. nivicentris*, other individuals of the *D. occidentalis* obtained by him in Guatemala. The true specific relations of the specimens both from Southern Mexico and Central America have since been made clear by Dr. Selater, Ibis, 1865, p. 87, enabling us to give this species as a winter visitant of the countries above named. Mr. Salvin states (Ibis, 1866, p. 191) that these birds were found in most of the elevated districts where pines abound. He procured specimens in the Volcan de Fuego, in the hills above the Plain of Salama, and near the mines of Alotepeque.

Dendroica pinus, BAIRD.

PINE-CREEPING WARBLER.

Sylvia pinus, WILS. Am. Orn. III, 1811, 25, pl. xix, fig. 4. — BON. ; NUTT. — AUD. Orn. Biog. II, pl. cxi. *Thryothorus pinus*, STEPH. *Sylvicola pinus*, JARD. ; RICH. ; BON. ; AUD. Birds Am. II, pl. lxxxii. — JONES, Nat. Bermuda, 1859, 59 (abundant in Oct.). *Rhinanophus pinus*, BON. *Dendroica pinus*, BAIRD, Birds N. Am. 1858, 277 ; Rev. 190. — SELATER, Catal. 1861, 31, no. 189. — COUES, Pr. A. N. Sc. 1861, 220 (Labrador coast). — SAMUELS, 229. — BRYANT, Pr. Bost. Soc. 1867, 67 (Inagua). *Sylvia vigorsii*, AUD. Orn. Biog. I, 1832, 153, pl. xxx. *Parco vigorsii*, NUTT.

SP. CHAR. *Spring male*. Upper parts nearly uniform and clear olive-green, the feathers of the crown with rather darker shafts. Under parts generally, except the middle of the belly behind, and under tail-coverts (which are white), bright gamboge-yellow, with obsolete streaks of dusky on the sides of the breast and body. Sides of head and neck olive-green like the back, with a broad superciliary stripe; the eyelids and a spot beneath the eye very obscurely yellow; wings and tail brown; the feathers edged with dirty white, and two bands of the same across the coverts. Inner web of the first tail-feather with nearly the terminal half, of the second with nearly the terminal third, dull inconspicuous white. Length, 5.50; wing, 3.00; tail, 2.40. (1356.)

Spring female. Similar, but more grayish above, and almost grayish-white, with a tinge of yellow beneath, instead of bright yellow. *Young*. Umber-brown above, and dingy pale ashy beneath, with a slight yellowish tinge on the abdomen. Wing and tail much as in the autumnal adult.

HAB. Eastern Province of United States, north to Massachusetts; winters in United States. Not recorded in West Indies or Middle America (except Bahamas and Bermuda?).

Autumnal males are much like spring individuals, but the yellow beneath is softer and somewhat richer, and the olive above overlaid with a reddish-umber tint.

HABITS. The Pine-creeping Warbler is found more or less abundantly throughout the United States from the Atlantic to the Valley of the Missis-

issippi. Dr. Woodhouse states that it is common in Texas and New Mexico. It was not, however, met with by any other of the government exploring parties. Dr. Gerhardt found it quite common in Northern Georgia, where it remains all the winter, and where it breeds very early in the season. On the 19th of April he found a nest of these birds with nearly full-grown young. It has not been found in Maine by Professor Verrill nor by Mr. Boardman, nor in Nova Scotia by Lieutenant Bland. Mr. Allen has found it breeding abundantly in the western part of Massachusetts, where it is one of the earliest Warblers to arrive, and where it remains until October. In 1861 they were abundant in the pine woods near Springfield as early as April 4, although the ground at that time was covered with snow. During the last weeks of April and the early part of May they frequent the open fields, obtaining much of their food from the ground in company with *D. palmarum*, the habits of which, at this time, it closely follows. Later in the season they retire to the pine forests, where they remain almost exclusively throughout the summer, chiefly on the tops of the tallest trees. For a few weeks preceding the first of October they again come about the orchards and fields. In its winter migrations it does not appear to leave this country, and has not been found in any of the West India Islands, in Mexico, nor in South or Central America. It breeds sparingly in Southern Illinois.

Mr. Jones found these birds numerous in Bermuda late in September, but they all disappeared a few weeks later. Dr. Bryant found them at Inagua, Bahamas.

Wilson first noticed this Warbler in the pine woods of the Southern States, where he found it resident all the year. He describes it as running along the bark of pine-trees, though occasionally alighting and feeding on the ground. When disturbed, it always flies up and clings to the trunks of trees. The farther south, the more numerous he found it. Its principal food is the seeds of the Southern pitch-pine and various kinds of insects. It was associated in flocks of thirty in the depths of the pine barrens, easily recognized by their manner of rising from the ground and alighting on the trunks of trees.

Audubon also speaks of this bird as the most abundant of its tribe. He met with them on the sandy barrens of East Florida on the St. John's River early in February, at which period they already had nests. In their habits he regarded them as quite closely allied to the Creepers, ascending the trunks and larger branches of trees, hopping along the bark searching for concealed larvæ. At one moment it moves sideways along a branch a few steps, then stops and moves in another direction, carefully examining each twig. It is active and restless, generally searching for insects among the leaves and blossoms of the pine, or in the crevices of the bark, but occasionally pursuing them on the wing. It is found exclusively in low lands, never in mountainous districts, and chiefly near the sea.

Its nest is usually placed at considerable height, sometimes fifty feet or

more from the ground, and is usually fastened to the twigs of a small branch. In Massachusetts it has but a single brood in a season, but at the South it is said to have three.

The flight of this Warbler is short, and exhibits undulating curves of great elegance. Its song is described as monotonous, consisting merely of continuous and tremulous sounds. Mr. Audubon found none beyond New Brunswick, and it has never been found in Nova Scotia so far as I am aware.

Both old and young birds remain in Massachusetts until late in October, and occasionally birds are seen as far to the north as Philadelphia in mid-winter. At this season they abound in the pine forests of the Southern States, where they are at that time the most numerous of the Warblers, and where some are to be found throughout the year.

In the summer their food consists of the larvæ and eggs of certain kinds of insects. In the autumn they frequent the Southern gardens, feeding on the berries of the cornel, the box grape, and other small fruit. Mr. Nuttall states that their song is deficient both in compass and in variety, though not disagreeable. At times, he states, it approaches the simpler trills of the canary; but is usually a reverberating, gently rising or murmuring sound like *cr-r'-r'-r'-r'-oh*, or in the springtime like *tee-tee-tee tee-tee-tee*, and sometimes like *tsh-tsh-tsh-tee-tee-tee*, exhibiting a pleasing variety in its cadences. The note of the female is not unlike that of the Black and White Creeper.

On the 7th of June, Mr. Nuttall discovered a nest of this Warbler in a Virginia juniper-tree in Mount Auburn, some forty feet from the ground, and firmly fixed in the upright twigs of a close branch. It was a thin but very neat structure. Its principal material was the old and wiry stems of the *Polygonum tenax*, or knot-weed. These were circularly interlaced and interwound with rough liny fibres of *asclepias* and caterpillars' webs. It was lined with a few bristles, slender root-fibres, a mat of the down of fern-stalks, and a few feathers. Mr. Nuttall saw several of these nests, all made in a similar manner. The eggs in the nest described were four, and far advanced towards hatching. They were white, with a slight tinge of green, and were freely sprinkled with small pale-brown spots, most numerous at the larger end, where they were aggregated on a more purplish ground. The female made some slight complaint, but immediately returned to the nest, though two of the eggs had been taken.

Mr. Nuttall kept a male of this species in confinement. It at once became very tame, fed gratefully from the hand, from the moment it was caught, on flies, small earthworms, and minced flesh, and would sit contentedly on any hand, walking directly into a dish of water offered for drink, without any precautions, or any signs of fear.

Mr. J. G. Shute found a nest of these Warblers in Woburn as early as May 8. It contained four eggs, the incubation of which had commenced. Three other nests were also found by him in the same locality, all of them

between the 8th and the 24th of May, and all built on branches of the red pine and near the top. Several nests of this Warbler, found in Lynn, Mass., by Mr. George O. Welch, are alike in their mode of construction, and differ in their materials from other accounts. They are all somewhat loosely put together, and are composed externally of fine strips of the bark of the red cedar, fine inner bark of several deciduous trees, dry stalks of plants, the exuviae of insects, and fine dry grasses. The cavities of these nests, which are comparatively large and deep, were lined with the fur of the smaller mammals, the silky down of plants, and feathers. A few fine wiry roots were also intermingled. These nests are about two and a half inches in height and three in diameter.

The eggs of this Warbler are of a rounded oval shape, have an average length of .72 of an inch, and a breadth of .55. They resemble in size and appearance the eggs of the *D. castanea*, but the spots are more numerous, and the blotches larger and more generally distributed. The ground-color is a bluish-white. Scattered over this are subdued tintings of a fine delicate shade of purple, and upon this are distributed dots and blotches of a dark purplish-brown, mingled with a few lines almost black.

***Dendroica montana*, BAIRD.**

BLUE MOUNTAIN WARBLER.

Sylvia montana, WILS. Am. Orn. V, 1812, 113, pl. xlv, fig. 2 ("Blue Mountains of Pennsylvania"). — AUD. Orn. Biog. V, 294 ("California"!) *Sylvicola montana*, JARD. ; AUD. Birds Am. II, 1841, 69, pl. xcviii. *Dendroica montana*, BAIRD, Birds N. Am. 1858, 279 ; Rev. 190. *Sylvia tigrina*, VIEILL. Ois. Am. Sept. II, 1807, 34, pl. xciv (U. S. and St. Domingo).

SP. CHAR. This species is four inches and three quarters in length ; the upper parts a rich yellow-olive ; front, cheeks, and chin yellow, also the sides of the neck ; breast and belly pale yellow, streaked with black or dusky ; vent plain pale yellow. Wings black ; first and second rows of coverts broadly tipped with pale yellowish-white ; tertials the same ; the rest of the quills edged with whitish. Tail black, handsomely rounded, edged with pale olive ; the two exterior feathers on each side white on the inner vanes from the middle to the tips, and edged on the outer side with white. Bill dark brown. Legs and feet purple-brown ; soles yellow. Eye dark hazel. (Wilson.)

HAB. "Blue Mountains of Virginia." St. Domingo?

This species is only known from the description of Wilson, Vieillot, and Audubon, and we are not aware that a specimen is to be found in any collection. If described correctly, it appears different from any established species, although the most nearly related to *D. pinus*, which, however, differs in the absence of a yellow frontlet, in having a greener back, less distinct streaks beneath, and in the white of the anal region.

HABITS. Whether the Blue Mountain Warbler is a genuine species or an unfamiliar plumage of a bird better known to us in a different dress is a

question not altogether settled to the minds of some. It was described by Wilson from a single specimen obtained near the Blue Ridge of Virginia. Audubon found another in the collection of the Zoological Society. From this he made his drawing. A third has also been met with and described by Vieillot. We know nothing in regard to its habits, except that its song is said to be a single *screep*, three or four times repeated. Its breeding-habits, its manner of migration, and the place of its more abundant occurrence, yet remain entirely unknown.

Dendroica kirtlandi, BAIRD.

KIRTLAND'S WARBLER.

Sylvicola kirtlandi, BAIRD, Ann. N. Y. Lye. V, June, 1852, 217, pl. vi (Cleveland, Ohio).
CASSIN, Illust. 1, 1855, 278, pl. xlvii. *Dendroica kirtlandi*, BAIRD, Birds N. Am.
1858, 286; Rev. 206.

SP. CHAR. Above slate-blue, the feathers of the crown with a narrow, those of the middle of the back with a broader, streak of black; a narrow frontlet involving the lores, the anterior end of the eye, and the space beneath it (possibly the whole auriculars), black; the rest of the eyelids white. The under parts are clear yellow (almost white on the under tail-coverts); the breast with small spots and sides of the body with short streaks of black. The greater and middle wing-coverts, quills, and tail-feathers are edged with dull whitish. The two outer tail-feathers have a dull white spot near the end of the inner web, largest on the first. Length, 5.50; wing, 2.80; tail, 2.70. (4,363.)

HAB. Northern Ohio, and Bahamas.

In addition to the type which is in the collection of the Smithsonian Institution, a second specimen was obtained by Dr. Samuel Cabot, of Boston, taken at sea between the islands of Abaco and Cuba. It must, however, be considered as one of the rarest of American birds.

HABITS. Kirtland's Warbler is so far known by only a few rare specimens as a bird of North America, and its biography is utterly unknown. The first specimen of this species, so far as is known, was obtained by Dr. Jared P. Kirtland, of Cleveland, O., in May, 1851. It was shot by that naturalist in woods near that city, and was by him given to Professor Baird, who described it in the Annals of the New York Lyceum. It appears to be closely allied to both the *D. coronata* and *D. auduboni*, and yet to be a specifically distinct bird. A second specimen, in the cabinet of Dr. Samuel Cabot, Jr., of Boston, was obtained at sea, between the islands of Cuba and Abaco. A third specimen was obtained June 9, 1860, near Cleveland, and is in the collection of Mr. R. K. Winslow, of that city. Another specimen is also reported as having been obtained in the same neighborhood, but not preserved; and Dr. Hoy, of Racine, Wis., is confident that he has seen it in the neighborhood of that place. At present all that we can give in regard to its history, habits, or distribution must be inferred from these few and meagre facts.

Dendroica palmarum, BAIRD.

YELLOW RED-POLL WARBLER.

Motacilla palmarum, GMEL. Syst. Nat. I, 1788, 951 (based on Palm Warbler, LATHAM, Syn. II, p. 498, no. 131, St. Domingo). *Sylvia p.* LATH. ; VIEILLLOT, II, pl. lxxiii. — BON. ; D'ORB. Sagra's Cuba, Ois. 1840, 61, pl. viii. *Sylvicola p.* SALLÉ, P. Z. S. 1857, 231 (St. Domingo). *Dendroica p.* BAIRD, Birds N. Am. 1858, 288 ; Rev. 207. — SCLATER, Catal. 1861, 33, no. 199. — IB. P. Z. S. 1861, 71 (Jamaica ; April). — BRYANT, Pr. Bost. Soc. VII, 1859 (Bahamas). — IB. 1867, 91 (Hayti). — BREWER, Pr. Bost. Soc. 1867, 139. — GUNDLACH, Cab. Jour. 1861, 326 (Cuba : very common). — SAMUELS, 240. *Sylvia petechia*, WILS. VI, pl. xxviii, fig. 4. — BON. ; NUTT. ; AUD. Orn. Biog. II, pl. clxiii, clxiv. *Sylvicola petechia*, SWAINS. ; AUD. Birds Am. II, pl. xc. *Sylvicola ruficapilla*, BON. *Rhimanphus ruf.* CAB. Jour. III, 1855, 473 (Cuba ; winter).

SP. CHAR. *Adult in spring.* Head above chestnut-red ; rest of upper parts brownish olive-gray ; the feathers with darker centres, the color brightening on the rump, upper tail-coverts, and outer margins of wing and tail-feathers, to greenish-yellow. A streak from nostrils over the eye, and under parts generally, including the tail-coverts, bright yellow ; paler on the body. A maxillary line ; breast and sides finely but rather obsoletely streaked with reddish-brown. Cheeks brownish (in highest spring plumage chestnut like the head) ; the eyelids and a spot under the eye olive-brown. Lores dusky. A white spot on the inner web of the outer two tail-feathers, at the end. Length, 5 inches ; wing, 2.42 ; tail, 2.25. Sexes nearly alike.

Autumnal males are more reddish above ; under parts tinged with brown, the axillars yellow.

HAB. Eastern Province of North America to Fort Simpson and Hudson's Bay ; Bahamas, Jamaica, Cuba, and St. Domingo in winter. Not noted from Mexico or Central America.

This species varies considerably in different stages, but can generally be recognized. Immature specimens resemble those of *P. tigrina*, but differ in the chestnut crown, browner back, less bright rump, brighter yellow of under tail-coverts, smaller blotches on tail, no white bands on the wings, etc., as well as in the shape of the bill.

HABITS. The Red-Poll Warbler belongs, in its geographical distribution, to that large class of birds which visit high northern latitudes to breed, passing back and forth over a wide extent of territory, from the West India Islands to the extreme northern portions of the continent. Specimens have been procured from Cuba, Jamaica, St. Domingo, and the Bahamas, in fall, winter, and spring, where, at such times, they seem to be generally quite common. It has not been observed in Mexico or in Central or South America. It has been met with on the western shore of Lake Michigan, but nowhere farther to the west. It has been found in the Red River Settlement, Fort George, Fort Simpson, and Fort Resolution, in the Hudson Bay Territory. It is not known, so far as I am aware, to breed south of latitude 44°. Wilson and Nuttall both state that this bird remains in Pennsylvania through the summer, but they were probably misinformed ; at least, there is no recent evidence to this effect. Wilson also states that he shot speci-

mens in Georgia, near Savannah, early in February, and infers that some pass the entire winter in Georgia, which is not improbable, as this bird can endure severe weather without any apparent inconvenience.

There are several marked peculiarities in the habits of this Warbler which distinguish it from every other of its genus. Alone of all the *Dendroica*, so far as is known, it builds its nest on the ground, and is quite terrestrial in its habits, and, notwithstanding the statements of earlier writers, these are quite different from all others of this genus. It has very little of the habits of the Creeper and still less of the Flycatcher, while it has all the manners of the true Ground Warbler, and even approximates, in this respect, to the Titlarks.

My attention was first called to these peculiarities by Mr. Downes of Halifax, in the summer of 1851; and I was surprised to find it nesting on the ground, and yet more to note that in all its movements it appeared fully as terrestrial as the Maryland Yellow-Throat, or the Towhee Finch. Since then Mr. Boardman and other naturalists have found its nest, which is always on the ground.

Mr. MacCulloch, in the fourth volume of the Journal of the Boston Natural History Society, has given an interesting paper upon the terrestrial peculiarities of this species, showing them to be nearly identical with those of the *sciuri*, with whom he thinks it should be classed. In its terrestrial movements this bird is shown to be quite at home, while other Warblers, when driven by necessity to feed upon the ground, are awkward, and manifest a want of adaptation.

Dr. Henry Bryant, another very close and accurate observer, in his notes on the birds of the Bahamas, referring to this Warbler, speaks of it as extremely abundant, but confined to the sea-shore. "Its habits," he adds, apparently with some surprise, "are decidedly terrestrial, and it approaches, in this respect, to the Titlarks. They were constantly running along the edges of the road, or else hopping amongst the low branches in the pastures. I did not see a single individual seeking for food amidst the large trees. These birds could be constantly seen running up and down in the market in search of small flies. These they caught either on the ground or else by hopping up a few inches, scarcely opening the wings, and alighting directly."

Mr. J. A. Allen, in his Birds observed in Western Massachusetts, shows that these peculiarities of habits in this Warbler had not escaped his notice. He speaks of it as "frequenting, in company with *D. pinus*, the edges of thickets, orchards, and open fields, and is much on the ground."

Mr. George A. Boardman, writing me from St. Stephen, March, 1867, says: "The Yellow Red-Poll is one of our most common Warblers, and, unlike most other Warblers, spends much of its time feeding upon the ground. It is no uncommon thing to see a dozen or two on the ground in my garden at a time, in early spring. Later in the season they have more of the habits of other Warblers, and are in summer expert flycatchers. In the fall we again see them mostly upon the ground, feeding with the Blue Snowbirds (*Junco*

hyemalis) and the Chipping Sparrow. They breed in old brushy pastures, and very early, nesting alongside of some little knoll, and, I think, always upon the ground. The nest is very warmly lined with feathers."

Mr. MacCulloch, in the paper already referred to, states that during their autumnal migrations they seem invariably to exhibit the habits of true *Sylvicolidæ*, gleaning among branches of trees for the smaller insects, and not unfrequently visiting the windows of dwellings in search of spiders and insects.

In their migrations through Massachusetts these Warblers are everywhere quite abundant in the spring, but in their return in autumn are not observed in the eastern part of the State, though very common in the western from September into November, remaining long after all the other Warblers are gone. None remain during the summer.

In Western Maine, Mr. Verrill states, it is quite common both in spring and in fall, arriving in April, earlier than any other Warbler, and again becoming abundant the last of September.

I found it plentiful in the vicinity of Halifax, where it occurs throughout the summer from May to September.

Mr. Ridgway gives this species as perhaps the most numerous of the transient visitants, in spring and fall, in Southern Illinois. It is very terrestrial in its habits, keeping much on the ground, in orchards and open places, and its movements are said to be wonderfully like those of *Anthus ludovicianus*.

In the vibratory motions of its tail, especially when upon the ground, these birds greatly resemble the Wagtails of Europe. They have no other song than a few simple and feeble notes, so thin and weak that they might almost be mistaken for the sounds made by the common grasshopper.

The Red-Poll usually selects for the site of its nest the edge of a swampy thicket, more or less open, placing it invariably upon the ground. This is usually not large, about three and a half inches in diameter and two and a half in depth, the diameter and depth of the cavity each averaging only half an inch less. The walls are compactly and elaborately constructed of an interweaving of various fine materials, chiefly fine dry grasses, slender strips of bark, stems of the smaller plants, hypnum, and other mosses. Within, the nest is warmly and softly lined with down and feathers.

Mr. Kennicott met with a nest of this bird at Fort Resolution, June 18. It was on the ground, on a hummock, at the foot of a small spruce, in a swamp. When found, it contained five young birds.

Their eggs are of a rounded-oval shape, and measure .70 of an inch in length by .55 in breadth. Their ground-color is a yellowish or creamy-white, and their blotches, chiefly about the larger end, are a blending of purple, lilac, and reddish-brown.

Dendroica discolor, BAIRD.**PRAIRIE WARBLER.**

Sylvia discolor, VIEILL. Ois. Am. Sept. 11, 1807, 37, pl. xcviii. — BON. ; AUD. Orn. Biog. I, pl. xiv ; NUTT. — LEMBEYE, Aves Cuba, 1850, 32, pl. vi, fig. 2. *Sylvicola discolor*, JARD. ; RICH. ; BON. ; AUD. Birds Am. II, pl. xcvii. — GOSSE, Birds Jam. 1847, 159. *Rhamnophus discolor*, CAB. Jour. III, 1855, 474 (Cuba ; winter). *Dendroica discolor*, BAIRD, Birds N. Am. 1858, 290 ; Rev. 213. — NEWTON, Ibis, 1859, 144 (St. Croix). — BRYANT, Pr. Bost. Soc. VII, 1859 (Bahamas). — IB. 1866 (Porto Rico) ; 1867, 91 (Hayti). — GUNDLACH, Cab. Jour. 1861, 326 (Cuba ; very common). — SAMUELS, 241. *Sylvia minuta*, WILSON, III, pl. xxv, fig. 4.

SP. CHAR. *Spring male*. Above uniform olive-green ; the interseapular region with chestnut-red centres to feathers. Under parts and sides of the head, including a broad superciliary line from the nostrils to a little behind the eye, bright yellow, brightest anteriorly. A well-defined narrow stripe from the commissure of the mouth through the eye, and another from the same point curving gently below it, also a series of streaks on each side of the body, extending from the throat to the flanks, black. Quills and tail-feathers brown, edged with white ; the terminal half of the inner web of the first and second tail-feathers white. Two yellowish bands on the wings. *Female* similar, but duller. The dorsal streaks indistinct. Length, 4.86 ; wing, 2.25 ; tail, 2.10.

First plumage of the young not seen.

HAB. Atlantic region of United States, north to Massachusetts ; South Illinois ; in winter very abundant throughout all the West India Islands, as far, at least, as the Virgin Islands. Not recorded from Mexico or Central America.

Autumnal specimens have the plumage more blended, but the markings not changed. A young male in autumnal dress is wholly brownish olive-green above, the whole wing uniform ; the forehead ashy, the markings about the head rather obsolete, the chestnut spots on the back and the black ones on the sides nearly concealed.

HABITS. The Prairie Warbler, nowhere an abundant species, is pretty generally, though somewhat irregularly, distributed through the eastern portion of the United States from Massachusetts to Georgia during its breeding-season. The Smithsonian Museum embraces no specimens taken west of Philadelphia or Washington. I have had its nest and eggs found in Central New York. Mr. Audubon speaks of its occurring in Louisiana, but his accounts of its nesting are so obviously inaccurate that we must receive this statement also with misgivings. Wilson, however, obtained specimens in Kentucky, and gave to it the inappropriate name of *Prairie Warbler*. Nuttall regarded it as rare in New England, which opinion more careful observations do not confirm. They certainly are not rare in certain portions of Massachusetts. In Essex County, and, according to Mr. Allen, in the vicinity of Springfield, they are rather common. The Smithsonian possesses specimens from the Bahamas, Jamaica, St. Croix, St. Thomas, and other West India islands. Dr. Gundlach speaks of it as common in Cuba. In the Bahamas, Dr. Bryant found these Warblers more abundant than he had ever known them in the United States. In January all the males were in winter

plumage, some not having changed by April to their summer costume. He regarded them as constant residents of those islands. They had all paired off by the middle of April.

In the island of St. Croix, Mr. Edward Newton observed these Warblers from the 10th of September to the 27th of March. They were present on the island about two thirds of the year, and while they were found were very common.

In Jamaica, according to Mr. March, they are numerous throughout the entire year, though less abundant during the summer months. They were always plentiful in the gardens about the *Malpighia glabra*, capturing small insects from the ripe fruit.

Mr. Gosse, on the contrary, regarded it as only a winter visitant of that island, appearing by the 18th of August, and disappearing by the 11th of April. He observed them among low bushes and herbaceous weeds, along the roadside, near the ground, examining every stalk and twig for insects. Others flew from bushes by the wayside to the middle of the road, where, hovering in the air, a few feet from the ground, they seemed to be catching small dipterous insects. Their stomachs were filled with fragments of insects.

Wilson found them usually in open plains and thinly wooded tracts, searching most leisurely among the foliage, carefully examining every leaf or blade of grass for insects, uttering, at short intervals, a brief *chirr*. They did not appear to be easily alarmed, and he has known one of these birds to remain half an hour at a time on the lower branch of a tree, and allow him to approach the foot, without being in the least disturbed. He found their food consisted of winged insects and small caterpillars.

In 1858, Mr. John Cassin wrote me: "The Prairie Warbler certainly breeds in New Jersey, near Philadelphia. I have seen it all summer for the last twelve years, and have seen the young just able to fly, but never found the nest. It has a very peculiar note, which I know as well as I do the Cat-bird's, having often followed and searched it out. It frequents cedar-trees, and I suspect breeds in and about them."

Dr. Cones found the Prairie Warbler mostly a spring and autumn visitant in the vicinity of Washington, being quite abundant during those seasons. A few were observed to remain during the breeding-season. They arrive earlier than most of this family of birds, or about the 20th of April. He found them frequenting, almost exclusively, cedar-patches and pine-trees, and speaks of their having very peculiar manners and notes.

Both Wilson and Audubon were evidently at fault in their descriptions of the nest and eggs. These do not correspond with more recent and positive observations. Its nest is never pensile. Mr. Nuttall's descriptions, on the other hand, are made from his own observations, and are evidently correct. He describes a nest that came under his observation as scarcely distinguishable from that of the *D. aestiva*. It was not pensile, but fixed in a forked branch, and formed of strips of the inner bark of the red cedar, fibres of *asclepias*, and caterpillars' silk, and thickly lined with the down of the *Gnaphalium*

plantaginum. He describes the eggs as having a white ground, sharp at one end, and marked with spots of lilac-purple and of two shades of brown, more numerous at the larger end, where they formed a ring. He speaks of their note as slender, and noticed their arrival about the second week of May, leaving the middle of September.

At another time Mr. Nuttall was attracted by the slender, filing notes of this bird, resembling the suppressed syllables 'tsh-'tsh-'tsh-'tshca, beginning low and gradually growing louder. With its mate it was busily engaged collecting flies and larvæ about a clump of locust-trees in Mount Auburn. Their nest was near, and the female, without any precautions, went directly to it. Mr. Nuttall removed two eggs, which he afterwards replaced. Each time, on his withdrawal, she returned to the nest, and resorted to no expedients to entice him away.

Several nests of this Warbler have been obtained by Mr. Welch in Lynn. One was built on a wild rose, only a few feet from the ground. It is a snug, compact, and elaborately woven structure, having a height and a diameter of about two and a half inches. The cavity is two inches wide and one and a half deep. The materials of which the outer parts are woven are chiefly the soft inner bark of small shrubs, mingled with dry rose-leaves, bits of vegetables, wood, woody fibres, decayed stems of plants, spiders' webs, etc. The whole is bound together like a web by cotton-like fibres of a vegetable origin. The upper rim of this nest is a marked feature, being a strongly interlaced weaving of vegetable roots and strips of bark. The lining of the nest is composed of fine vegetable fibres and a few horse-hairs. This nest, in its general mode of construction, resembles all that I have seen; only in others the materials vary, — in some dead and decayed leaves, in others remains of old cocoons, and in others the pappus of composite plants, being more prominent than the fine strips of bark. The nests are usually within four feet of the ground. The eggs vary from three to five, and even six.

The late Dr. Gerhardt found this bird the most common Warbler in Northern Georgia. There its nests were similar in size, structure, and position, but differed more or less in the materials of which they were made. The nests were a trifle larger and the walls thinner, the cavities being correspondingly larger. The materials were more invariably fine strips of inner bark and flax-like vegetable fibres, and were lined with the finest stems of plants, in one case with the feathers of the Great Horned Owl. In that neighborhood the eggs were deposited by the 15th of May.

In Massachusetts the Prairie Warbler invariably selects wild pasture-land, often not far from villages, and always open or very thinly wooded. In Georgia their nests were built in almost every kind of bush or low tree, or on the lower limbs of post-oaks, at the height of from four to seven feet. Eggs were found once as early as the 2d of May, and once as late as the 10th of June. The birds arrived there by the 10th of April, and seemed to prefer hillsides, but were found in almost any open locality.

In Southern Illinois, Mr. Ridgway cites this species as a rather rare bird among the oak barrens where it breeds. He also met with it in orchards in the wooded portions, in April, during the northward migration of the *Sylvicolida*.

The eggs are of an oval shape, pointed at one end, and measure .68 by .48 of an inch. They have a white ground, marked with spots of lilac and purple and two shades of umber-brown.

SUBFAMILY GEOTHYLPINÆ.

SECTION SEIUREÆ.

The diagnosis of the subfamily will be found on page 178. The *Sciuræ*, as there stated, have the wings pointed, and rather longer than the nearly even tail, which is unspotted. The genera differ in proportion rather than absolutely, *Oporornis* having longer wings and larger claws. The coloration, however, is always distinctive, as follows:—

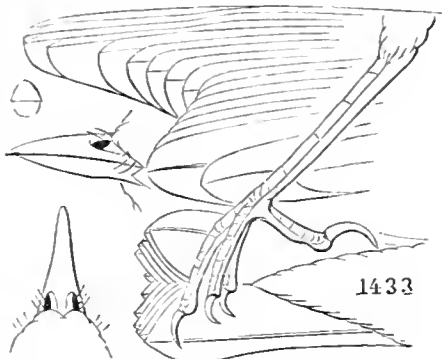
Under part white or whitish, thickly streaked	<i>Sciurus.</i>
Beneath yellow, without spots	<i>Oporornis.</i>

GENUS SEIURUS, SWAINSON.

Sciurus, SWAINSON, Zool. Jour. III, 1827, 171. (Sufficiently distinct from *Sciurus*.) (Type, *Motacilla aurocapilla*, L.)

Henicocichla, GRAY, List of Genera, 1840.

GEX. CHAR. Bill rather sylvicoline, compressed, with a distinct notch. Gonys ascending. Rictal bristles very short. Wings moderate, about three quarters of an inch longer than the tail; first quill scarcely shorter than the second. Tail slightly rounded; feathers acuminate. Tarsi about as long as the skull, considerably exceeding the middle toe. Under tail-coverts reaching within about half an inch of the end of the tail. Color above olivaceous; beneath whitish, thickly streaked on the breast and sides. Wings and tail immaculate. Nests on the ground, often arched or sheltered by position or dry leaves. Eggs white, marked with red, brown, and purple.



Seiurus aurocapillus.

This genus is decidedly sylvicoline in general appearance, although the spots on the breast resemble somewhat those of the Thrushes. The three species may be grouped as follows:—

A. Middle of crown brownish-orange, bordered by blackish. No white super-	
ciliary streak	<i>S. aurocapillus.</i>

- B.** Crown like the back. A well-defined superciliary light stripe.
 Thickly streaked beneath, including crissum. Ground-color and superciliary stripe yellowish. Bill small *S. noveboracensis*.
 Sparsely streaked beneath; throat and crissum immaculate. Ground-color and superciliary stripe white. Bill very large *S. ludovicianus*.

Seiurus aurocapillus, SWAINS.

GOLDEN-CROWNED THRUSH.

Motacilla aurocapilla, LINN. S. N. 1, 1766, 334. *Turdus aur.* LATH.; WILS. Am. Orn. II, pl. xiv, fig. 2. — AUD. Orn. Biog. II, pl. cxliii. *Sylvia aur.* BON. *Seiurus aur.* SWAINSON, Zool. Jour. III, 1827, 171. — BAIRD, Birds N. Am. 1858, 260; Rev. 214. — MOORE, P. Z. S. 1859, 55 (Honduras). — MAX. Cab. Jour. 1858, 177. — JONES, Nat. Bermuda, 27. *Henicocichla aur.* SCLATER, Catal. 1861, 25, no. 159. — GUNDLACH, Cab. Jour. 1861, 326 (Cuba). *Seiurus aur.* D'ORB. Sagra's Cuba, 1840, 55. — DALL & BANNISTER, Tr. Chic. Ac. I, 1869, 278 (Alaska). — SAMUELS, 218. *Turdus coronatus*, VIEILL. Ois. II. 1807, 8.

Other localities quoted: *Cordoba*, SCLATER, P. Z. S. 1856, 293. *St. Domingo*, SALLÉ, P. Z. S. 1857, 231. *Guatemala*, SCLATER & SALVIN, Ibis, I, 1859, 10. *Santa Cruz* (winter), NEWTON, Ibis, 1859, 142. *Cuba* (winter), Cab. Jour. III, 471. *Jamaica*, GOSSE, Birds, 152. — SCLATER, P. Z. S. 1861, 70. *Costa Rica*, Cab. Jour. 1861, 84. *Orizaba* (winter), SUMICHRIST. *Yucatan*, LAWR. *Chiriqui*, SALV.

SP. CHAR. Above uniform olive-green, with a tinge of yellow. Crown with two narrow streaks of black from the bill, enclosing a median and much broader one of brownish-orange. Beneath white; the breast, sides of the body, and a maxillary line, streaked with black. The female and young of the year are not appreciably different. Length, 6.00; wing, 3.00; tail, 2.40.

HAB. Eastern Province of North America, north to English River, H. B. T., and Alaska; west to mouth of Platte, and Denver City, Colorado; Mazatlan; whole West Indies; Eastern Mexico; Honduras, Guatemala, and Costa Rica; Bermuda in autumn and winter (JONES).

HABITS. The Golden-crowned Thrush, or Oven-Bird, as in some portions



Seiurus aurocapillus

of the country it is exclusively called, inhabits the whole of eastern North America, as far to the west as the Great Plains, and to the north at least as far as English River. In the winter season it has been found in Mexico, St. Domingo, Jamaica, Cuba, and other West India islands, and in Central America is also very common. Mr. Sumichrast also speaks of it as common at Orizaba during the same season, and it has been found in the Bermudas and the Bahamas.

In all these places it usually appears early in the autumn and remains until the ensuing spring. It breeds as far to the north as it has been known to go. Richardson met with its nest on the banks of the Saskatchewan, and was

convinced that it bred at even still higher latitudes. Among some memoranda I received from the late Mr. Kennicott is one stating that he met with this Thrush breeding near English River, July 15. These birds arrive in the fur country about the first of May. How far to the south they breed we have no positive information. I have never received its eggs from any point south of Philadelphia, nor did I ever meet with it or hear its notes in summer in the vicinity of Washington. Audubon was of the opinion that a few remain to breed even in Louisiana, and states that he found them abundant in Texas in the middle of May, but he may have confounded this species with the Louisiana Thrush.

In Jamaica, where its habits have been carefully studied by Mr. Gosse, it arrives in September and leaves about the 20th of April. Mr. Würdemann obtained specimens at Cape Florida, September 24 and 25. Mr. Audubon mentions their appearing in Louisiana as early as the first of March. Wilson never noticed it in Louisiana before the last of April, nor after September. The Smithsonian possesses no specimen obtained earlier than May 1, except some procured April 25 from the mouth of Platte River. Mr. Allen notes its arrival in Western Massachusetts May 10. Mr. Verrill gives the early part of May as the time of its reaching Western Maine, and Mr. Boardman May 1 for the vicinity of Calais.

Though not found on the California coast, specimens of this bird have been taken in winter near Mazatlan, Mexico, showing probably that in their migrations they cross the mountains of Northern Mexico, as do the *Mniotilta varia* and a few other of our Eastern species.

In Eastern Massachusetts it usually appears from the 1st to the 10th of May, just as the first leaves of the trees are expanding, and is to be found only in thick woods, often near their edges. Occasionally found perched on the low limbs of trees, it is quite terrestrial in its habits, keeps a good deal on the ground, running about among the fallen leaves, more in the manner of a small quadruped than a bird. Mr. Audubon speaks of its frequenting shady woods, watered by creeks and rivulets. I have found them rather more abundant in woods upon high and dry ground, usually upon slopes of wooded hillsides. In this respect it appears to differ in a marked manner from its near of kin, the Water Thrush (*S. noveboracensis*).

This bird, and indeed all of this genus, have the peculiar vibratory motions of the tail noticed in the Wagtail of Europe, and also observed in our own Red-poll Warbler, and in the Titlarks. In consequence of these peculiarities this species is known, in Jamaica, as *Land Kickup*, and the *noveboracensis* as the *Water Kickup*. Mr. Gosse found in its stomach gravel, various seeds, mud-insects, caterpillars, and small turbinate shells.

The usual and more common song of this species is a very peculiar and striking one, unlike that of any other of our birds. It is said to somewhat resemble the song of the *Accentor modularis* of Europe. It is loud and clear, enunciated with great rapidity, and uttered with great emphasis at its close.

It is characterized by energy and power, rather than variety or sweetness, yet it is not unpleasing. Audubon calls it a "simple lay," and again "a short succession of simple notes," — expressions that would give one who had never heard its song an altogether incorrect idea of its true character. Wilson is still more in error when he states that this bird has no song, but an energetic twitter, when, in fact, it has two very distinct songs, each in its way remarkable. Nuttall describes its song as "a simple, long, reiterated note, rising from low to high, and shrill"; Richardson speaks of it as "a loud, clear, and remarkably pleasing ditty"; and Mr. Allen calls it "a loud, echoing song, heard everywhere in the deep woods." In reference to the songs of this bird, and the injustice that has been done by writers to this and other species of our birds, Mr. Boardman of St. Stephen has written me the following just observations.

"Many of our common Warblers, Thrushes, and other birds, have rare songs they reserve for some extra occasions, and many of our common birds do not get credit for half their real power of song. Once last spring, as I was watching for some birds, I heard a new and very pretty warble, something like the trill of a Winter Wren, and found that it came from our common slate-colored Snowbird (*Junco hyemalis*), a bird that I see every day that I go to the woods, and yet these notes I had never heard before. It is the same with the Golden-crowned Thrush. When it gets into the top of a tall tree, its strain is so rare and beautiful that but few know it as from that bird. The same is true of the Water Thrush, and also of both *Turdus pallasi* and *Turdus swainsoni*."

The Oven-Bird always nests on the ground, and generally constructs nests with arched or domed roofs, with an entrance on one side, like the mouth of an oven, and hence its common name. This arched covering is not, however, universal. For a site this species usually selects the wooded slope of a hill, and the nests are usually sunk in the ground. When placed under the shelter of a projecting root, or in a thick clump of bushes, the nest has no other cover than a few loose leaves resting on, but forming no part of it.

A nest from Racine, Wis., obtained by Dr. Hoy, is a fine typical specimen of the domed nests of this species. The roof is very perfect, and the whole presents the appearance of two shallow nests united at the rim, and leaving only a small opening at one side. This nest was five inches in diameter from front to back, six inches from side to side, and four inches high. The opening was two and a quarter inches wide, one and three quarters high. The cavity was two inches deep, below the brim. At the entrance the roof recedes about an inch, obviously to allow of a freer entrance and exit from the nest. Externally this nest is made of wood, mosses, lichens, and dry leaves, with a few stems and broken fragments of plants. The entrance is strongly built of stout twigs, and its upper portion is composed of a strong framework of fine twigs, roots, stems, mosses, dry plants, etc., all firmly interwoven, and lined with finer materials of the same.

On the 7th of June, 1858, I came accidentally upon a nest of this bird of a very different style of structure. It was in a thick wood in Hingham. The nest was built in a depression in the ground at the foot of some low bushes, and its top was completely covered by surrounding vines and wild flowers. It would probably have escaped notice had not my daughter, then a child of four years, attempted to gather some wild flowers growing directly over its entrance. This flushed the mother, who until then had remained quiet, although we were standing with our feet almost upon the nest, and the bird fluttered and tumbled about at our feet with well-feigned manoeuvres to distract our attention. The child in great glee sought to catch it, but it eluded her grasp, and, running off like a mouse, disappeared. The nest contained six eggs, was entirely open, and with no other cover than the wild plants that clustered above it. As to its identity there was no doubt, as the parent was afterwards snared upon its nest. This nest was somewhat loosely constructed of skeleton leaves, dry slender stalks, grasses, and pine-needles, and was lined with a few slender grasses and leaves. It had a diameter of six inches, and was two and a half inches deep. The cup had a diameter of three and a half inches and a depth of two, being very large for the size of the bird, probably owing to the shape of the cavity in which it was sunk.

The nest of this bird seems to be a favorite place of resort for the Cow Blackbird to deposit its egg. In one nest, found by Mr. Vickary in Lynn, no less than three eggs of these parasites had been placed.

The eggs of the Golden-crowned Thrush are subject to considerable variations. Their markings differ in their colors and shades, and yet more in number, size, and manner of distribution. The eggs are oval in shape, one end being but very slightly smaller than the other. Their average length is .82 of an inch, and their breadth is .55 of an inch. Their ground-color is a beautiful creamy-white. They are marked, usually principally about the larger end, with dots and blotches, intermingled, of red, reddish-brown, lilac, darker purple, and ferruginous. Occasionally these make a beautiful crown around the larger end, leaving the rest of the surface nearly free from spots.

***Seiurus noveboracensis*, NUTT.**

SMALL-BILLED WATER THRUSH.

Motacilla noveboracensis, GMELIN, S. N. 1, 1788, 958. *Sylvia nov.* LATH. ; VIEILLOT, Ois. Am. Sept. II, pl. lxxxii. *Seiurus nov.* NUTT. ; BON. ; AUD. Birds Am. III, pl. cxcix. — BAIRD, Birds N. Am. 1853, 261, pl. lxxx, fig. 1 ; Rev. 215. — MAX. Cab. Jour. 1858, 121. — DALL & BANNISTER (Alaska). — SAMUELS, 220. *Henicocichla nov.* CAB. Schom. Guiana, III, 666 ; Jour. 1860, 324 (Costa Rica). — SCLATER (Tobago). — GUNDLACH, Cab. Jour. 1861, 326 (Cuba). *Mniotilta nov.* GRAY. ?? *Motacilla fuscescens*, GMELIN, S. N. 984 (based on *Ficedula jamaicensis*, BRISSON, III, 512, Jamaica). *Turdus aquaticus*, WILS. ; AUD. Orn. Biog. 1839, 284, pl. cccxxxiii. *Sylvia anthoides*, VIEILLOT, Nouv. Dict. XI, 1817, 208. *Seiurus tenuirostris*, SW. 1827 ; GAMB. *Seiurus*

sulfurascens, D'ORNIGNY, Sagitt's Cuba, 1840, 57, pl. vi. *Scitrus gosse*, BON. Consp. 1850, 306 (Jamaica). *Anthus thermophilus*, LESS. Rev. Z. 1839, 101 (Colombia).

Other localities quoted: *Xalapa*, SCLATER. *Guatemala*, SCLATER & SALVIN. *Panama*, LAWRENCE. *Carthagena*, CASSIN. *Santa Cruz* (winter), NEWTON. *Cuba*, CAB. *Jamaica*, GOSSL.; SCL. *Venezuela*, SCL. & SALV. *Yucatan*, LAWRE. *St. Bartholemy*, SUND. *Veraagua*, SALV.

SP. CHAR. Bill, from rictus, about the length of the skull. Above olive-brown, with a shade of green; beneath pale sulphur-yellow, brightest on the abdomen. Region about the base of the lower mandible, and a superciliary line from the base of the bill to the nape, brownish-yellow. A dusky line from the bill through the eye; chin and throat finely spotted. All the remaining under parts and sides of the body, except the abdomen, and including the under tail-coverts, conspicuously and thickly streaked with olivaceous-brown, almost black on the breast. Length, 6.15; wing, 3.12; tail, 2.40. Bill, from rictus, .64. Sexes similar.

HAB. Eastern Province of North America, north to Arctic Ocean and Yukon (westward along northern border of United States to Cascade Mountains); Fort Bridger, DREXLER; Arizona (COLES); whole West Indies; Southeastern Mexico; all Central America; Panama and Eastern South America (Bogota; Carthagena; Brazil).

A very young bird (22,619, Fort Simpson, August 10) is very different from the adult in coloration. The upper parts are fuliginous-black, each feather with a broad terminal bar of pale ochraceous, wing-coverts tipped with the same, forming two distinct bands; streaks below as in the adult, but broader and less sharply defined.

HABITS. This species has a general distribution, at certain seasons, throughout the whole of eastern North America as far to the north as the Arctic Ocean. North of the United States it is also found on the Pacific coast as far south as the Cascade Mountains. In the winter it is quite common in all the West India Islands, in Southeastern Mexico, Central America, Panama, and the eastern part of South America to Brazil. From about latitude 43° northward it breeds throughout all North America. Sir John Richardson met with it at the Carlton House, where it was found frequenting the moist and thickly wooded banks of the river. These birds made their first appearance in May, and the greater portion soon after disappeared, as if proceeding still farther north to breed.

Among other memoranda given me by the late Mr. Kennicott was one furnished him by Mr. Lockhart, to the effect that, at Yukon River, June 21, 1859, he had shot a female Water Thrush as she flew from her nest. This contained five eggs, and was concealed under a small pile of drift, close to the river, but under large willow-trees. This was not lined with down. At the same locality another nest with six eggs was also obtained. This also was on the ground at the foot of some willows near the water. It was made of moss, and lined with very fine grass.

All that has been given by our earlier authors as to the habits of this species must be received with more or less uncertainty. The difference between this bird and that known as the Louisiana Thrush has not been sufficiently clear to these writers to enable us always to determine which of the

two they had in view. And even now the distribution in summer of the *ludovicianus* is hardly definable with precision.

Wilson describes the habits of those he observed in Pennsylvania as evincing a remarkable partiality for brooks, rivers, ponds, and the vicinity of water generally, wading in shallow pools in search of aquatic insects, and giving, as it moves it along, an almost continuously vibratory motion to its tail. He speaks of it as very shy, darting away with signs of alarm whenever approached, and uttering a sharp cry. In all other respects his account of this bird probably refers to the Louisiana species.

This is also, without doubt, true of nearly all Audubon gives in connection with the history of this Thrush, which in all probability does not breed in Louisiana, nor remain there through April, being at that time well on its way to more northern regions.

Mr. Gosse, in his notes on the birds of Jamaica, states that this bird reappears in that island about the end of August. He noticed them about the muddy margins of ponds, and they soon became abundant. Individuals were also to be seen running on the road, especially near the sea-shore, and by the edges of morasses. They ran rapidly, often waded up to their tibiae in water, or ran along the twigs of a fallen tree at the brink, and now and then flew up into the branches of a pimento or an orange-tree. Whether running or standing, they were continually flirting up their tails, after the manner of the European Wagtail. During its winter residence in Jamaica it has no song, only a monotonous cry, a sharp *chip*. Its stomach was found to contain water-insects and shells. Mr. March has noticed their arrival in Jamaica as early as August 5. They all leave by the first of April.

Mr. Allen found these birds not uncommon both in spring and in fall in the vicinity of Springfield. He thinks a few breed there, as he has met with them in the months of June, July, and August, very sparingly however. They arrive about the 12th of May. I have once, at least, met with its nest and eggs near Boston.

Dr. Coues says this bird is quite common, both in the spring and fall, near Washington, and breeds sparingly, having been found there in July. They arrive about the first of May, are eminently aquatic, frequent swampy thickets and thick dark woods interspersed with pools, where they associate with the Solitary Tatler.

In Southern Illinois this species, Mr. Ridgway states, is found only during its migrations and in mild winters. He never met with it in the breeding-season, when the *S. ludovicianus* is so abundant. But it returns early from the North, and he has shot numbers of them in August. During the whole fall they are common about all swampy places, or the margin of creeks in the woods; and in mild winters a few are found in the swamps of the bottom-lands, where the dense forest affords them comfortable shelter. On warm days in December and January, he has heard them singing with all the vigor

of spring in such localities. In notes, as well as in manners, Mr. Ridgway has noticed little difference between this species and *S. ludovicianus*. The song, however, is decidedly weaker, though scarcely less sweet, and the two are very easily distinguished at sight by one familiar with them.

These birds breed, though they are not very abundant, in the vicinity of Calais, and also in the western part of Maine. Professor Verrill states that they reached the neighborhood of Norway, Me., about the first of May, a fortnight earlier than Mr. Allen noted their arrival in Springfield. Mr. Verrill demonstrated the fact of their breeding in Western Maine, by finding, June 8, 1861, a nest and eggs in a dense cedar swamp near Norway. This was built in an excavation in the side of a decayed moss-covered log, the excavation itself forming an arch over the nest in the manner of, yet different from, that of the Golden-crowned. The nest itself was an exceeding beautiful structure, four and a half inches in diameter, but only an inch and a half in depth, being very nearly flat, the cavity only half an inch deep. The entire base was made of loose hypnum mosses, interspersed with a few dead leaves and stems. The whole inner structure or lining was made up of the fruit-stems of the same moss, densely impacted. The outer circumference was made up of mosses and intertwined small black vegetable roots.

This nest contained five eggs, the brilliant white ground of which, with their delicately shaded spots of reddish-brown, contrasted with the bright green of the mossy exterior, and set off to advantage by the conspicuous and unique lining, produce a very beautiful effect.

Mr. George A. Boardman of Calais, Me., an observing and accurate naturalist, has furnished me with the following interesting account of the habits of this species and its congener, the *auricapillus*, in a letter dated St. Stephen, March 23, 1867. "Did you ever notice their walk on the ground? You know that most of our birds are hoppers. These two, *S. norboracensis* and *S. auricapillus*, have a beautiful gliding walk, and of all our other birds I only remember two that are not hoppers, the *Anthus ludovicianus* and *Molothrus pectoris*. I do not think that a naturalist should ever say, as Wilson was constantly doing, that any bird has no note or song whatever, unless he is well acquainted with them, at all times, especially while breeding. Many birds seem really to have nothing to say except when mating. I think that our little walker, the Water Thrush, has been particularly ill used by writers in this respect, for I regard him as one of our liveliest singers. Its note is very high and clear, begins with a sudden outburst of melody, so as almost to startle you, is very clear and ringing, as if the bird had just found its mate after a long absence. It then keeps falling until you can hardly hear it. Its note is very sweet, and can be heard when you are in a canoe or boat a very long ways. Like most of our Warblers and Thrushes, when singing, they do not like intrusion, and it was a long while before I could make out the bird that uttered these notes. I could only do it by going in a boat or canoe. They hide in thick trees, over the water, where it

is impossible to walk up to them. I almost always find them on some island, in a river, that has been overflowed, and always very near the water."

Their eggs vary in length from .81 to .87 of an inch, and in breadth from .65 to .69. They have an oblong-oval shape, tapering to a point at one end and rounded at the other. Their ground is a clear crystal-white, and they are more or less marked with lines, dots, and dashes of varying shades of umber-brown. These markings are more numerous around the larger end, and are much larger and bolder in some than in others, in many being mere points and fine dots, and in such cases equally distributed over the whole egg. In others a ring of large confluent blotches is grouped around the larger end, leaving the rest of the egg nearly unmarked.

Seiurus ludovicianus, BONAP.

LOUISIANA WATER THRUSH.

Turdus ludovicianus, AUD. Orn. Biog. I, 1832, 99, pl. xix. *Seiurus ludovicianus*, BON. — BAIRD, Birds N. Am. 1858, 262, pl. lxxx, fig. 2; Rev. 217. — SCLATER, P. Z. S. 1859, 363 (Xalapa); 373 (Oaxaca); 1861, 70 (Jamaica). — SCLATER & SALVIN, Ibis, 1860, 273 (Guatemala). — SAMUELS, 579. *Henicocichla lud.* SCLATER, Catal. 1861, 25, no. 161 (Orizaba). ? *Turdus motacilla*, VIEILL. Ois. Am. Sept. II, 1807, 9, pl. lxxv (Kentucky). *Seiurus motacilla*, BON. 1850. *Henicocichla mot.* CAB. Jour. 1857, 240 (Cuba). — GUNDLACH, Jour. Orn. 1861, 326. *Henicocichla major*, CAB. Mus. Hein. 1850 (Xalapa).

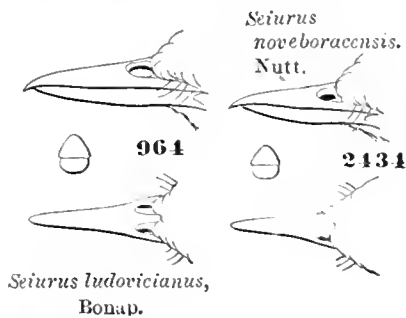
SP. CHAR. Bill longer than the skull. Upper parts olive-brown with a shade of greenish. A conspicuous white superciliary line from the bill to the nape, involving the upper lid, with a brown one from the bill through the eye, widening behind. Under parts white, with a very faint shade of pale buff behind, especially on the tail-coverts. A dusky maxillary line; the forepart of breast and sides of body with arrow-shaped streaks of the same color. Chin, throat, belly, and under tail-coverts, entirely immaculate. Length, 6.33; wing, 3.25; tail, 2.40; bill, from rictus, .75. Sexes similar. Young not seen.

HAB. Eastern Province of United States as far north as Carlisle, Penn., and Michigan; Cuba and Jamaica; Southern Mexico (Colima) to Guatemala.

Autumnal specimens have a more or less strong wash of ochraceous over the flanks and crissum, and the brown above rather darker and less grayish than in spring birds.

This species is very similar to *S. noveboracensis*, although readily distinguishable by the characters given in the diagnoses. The differences in the bill there referred to are illustrated in the accompanying diagram.

HABITS. The Water Thrush described by Wilson as most abundant in the lower part of the Mississippi Valley, as well as that given by Audubon as the Louisiana Water Thrush, though its position as a genuine species was afterwards abandoned, are undoubtedly referable to a closely allied but ap-



parently distinct *Sciurus*, now known as the Louisiana Water Thrush. This bird has a very close resemblance to the *noveboracensis*, differing chiefly in size and in having a larger bill. Although its distribution is not yet fully determined, it seems to belong rather to the South and Southwestern States, and only accidentally to be found north of the Middle States. Still a single specimen has been obtained in Massachusetts, and it has been several times found in Michigan and Missouri. Specimens of this bird have also been procured in Pennsylvania, Georgia, Tamaulipas, Mexico, Cuba, Jamaica, and Guatemala.

Its recognition as a distinct species from the common Water Thrush is so recent, and the two species so closely resemble each other, that as yet its habits and history are imperfectly known. Wilson refers to the birds he had met with in Mississippi and Louisiana, which we presume to have been the same, as being there in abundance, and eminently distinguished by the loudness, sweetness, and expressive vivacity of their notes. These he describes as beginning very high and clear, and as falling with an almost imperceptible gradation until they are scarcely articulated, — a description that would also answer very well for the song of the true Water Thrush. During their song, he adds, they are perched on the middle branches of a tree over the brook or river-bank, pouring out a charming melody, so loud and distinct that it may be heard at the distance of nearly half a mile. The voice of this bird appeared to him so exquisitely sweet and expressive that he was never tired of listening to it.

It is also quite probable that nearly all of Audubon's accounts of the habits of the Water Thrush were derived from his observation of this species, and not of its Northern congener. He describes its song as fully equal to that of the Nightingale, its notes as powerful and mellow, and at times as varied. He states that it is to be found at all seasons in the deepest and most swampy of the canebrakes of Mississippi and Louisiana. Its song is to be heard even in the winter, when the weather is calm and warm.

He describes its flight as easy and continued, just above the brakes, or close to the ground. When on the ground, it is continually vibrating its body, jerking out its tail and then closing it again. It walks gracefully along the branches or on the ground, but never hops. He states that it feeds on insects and their larvæ, and often pursues the former on the wing.

He describes the nest as placed at the foot and among the roots of a tree, or by the side of a decayed log, and says they are often easily discovered. They are commenced the first week of April. The outer portions are formed of dry leaves and mosses, the inner of fine grasses, with a few hairs or the dry fibres of the Spanish moss.

The eggs, four in number, are described as flesh-colored, sprinkled with dark red at the larger end. They are hatched in fourteen days. The young leave the nest in about ten days, and follow the parent on the ground from place to place. When disturbed on her nest in the earlier periods of incu-

bation, she merely flies off; but later, or when she has young, she tumbles about on the ground, spreads her wings and tail, utters piteous cries, and seems as if in the last agonies of despair. This species Mr. Audubon never met with farther east than Georgia, nor farther north than Henderson, Ky.

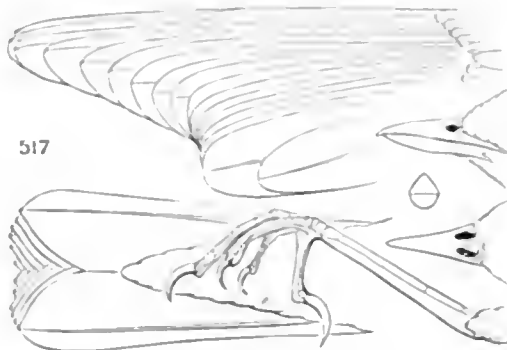
Of late years, or since attention has been more drawn to the specific difference between this species and the Water Thrush, it has apparently become more numerous, and has been obtained in considerable numbers in the vicinity of Washington. In that neighborhood, once considered so rare, it was found by Dr. Coues to be not at all uncommon at certain seasons and in particular localities. From the 10th of April to the 20th of May it was always to be met with among the dense laurel-brakes that border the banks of and fill the ravines leading into Rock Creek and Piney Branch. He believes they breed there, but they were not observed in the fall. They were usually very shy, darting at once into the most impenetrable brakes, but were at other times easily approached. He always found them in pairs, even as early as the 20th of April. Their call-note was a sparrow-like chirp, as if made by striking two pebbles together. They also had a loud, beautiful, and melodious song, the singularity of which first drew his attention to the bird.

Mr. Ridgway informs me that in the Wabash Valley this bird, familiarly known as the "Water Wagtail," is an abundant summer sojourner. It inhabits the dampest situations in the bottom-lands, the borders of creeks, lagoons, and swamps, living there in company with the Prothonotary Warbler (*Protonotaria citrea*). In its movements it is one of the quickest as well as the most restless of the *Sylvicolidae*, though it is eminently terrestrial in its habits. It is usually seen upon the wet ground, in a horizontal position, or even the posterior part of its body more elevated, and its body continually tilting up and down; if it fancies itself unobserved, it runs slyly beneath the brushwood overhanging the shore; but if startled, it flies up suddenly with a sharp and startling chatter. He adds that in early spring (from the latter part of February to the beginning of April) its rich loud song may be heard before the trees are in leaf, for it is one of the earliest of the Warblers to arrive. When singing, it is usually perched upon the lower branches of a tree overhanging the water, but he has frequently seen it among the topmost branches. Wilson and Audubon have not exaggerated the merits of the song of this bird, for among all its family there is certainly not one of our North American species that compares with it. In richness and volume of its very liquid notes it is almost unrivalled, though the song itself may not be considered otherwise remarkable.

Mr. Salvin met this species in different portions of Guatemala in the months of August, September, and November, 1859. A dry watercourse in the forest, or in the bottom of a barranco, seemed to be its favorite resort, while its near congener, the *noveboracensis*, was observed to seek rather the more open streams.

GENUS **OPORORNIS**, BAIRD.*Oporornis*, BAIRD, Birds N. Am. 1858, 246. (Type, *Sylvia agilis*, Wils.)

GEN. CHAR. Bill sylvicoline, rather compressed; distinctly notched at tip; rictal bristles very much reduced. Wings elongated, pointed, much longer than the tail; the first quill nearly or quite the longest. Tail very slightly rounded; tail-feathers acuminate, pointed; the under coverts reaching to within less than half an inch of their tip. Tarsi elongated, longer than the head; claws large, the hinder one as long as its digit, and longer than the lateral toes. Above olive-green; beneath yellow; tail and wings immaculate. Legs yellow.

*Oporornis formosus*.

This group of American Warblers is very distinct from any other. The typical species is quite similar in color to *Geothlypis philadelphia*, but is at once to be distinguished by much longer wings, more even tail, and larger toes and claws. It is also very similar to *Sciurus*, differing chiefly in the longer wings, larger claws, and absence of spots beneath.

Throat and crown ash-color; a white ring round the eye. No black on the side of the head *O. agilis*.

Throat and superciliary stripe yellow; top of the head and a streak beneath the eye black *O. formosus*.

Oporornis agilis, BAIRD.

CONNECTICUT WARBLER.

Sylvia agilis, WILS. Am. Orn. V, 1812, 64, pl. xxxix, fig. 4. — AUD. Orn. Biog. II, pl. cxxxviii; BON. *Sylvicola ag.* JARD.; AUD. Birds Am. II, pl. xcix. *Trichas ag.* NUTT. *Oporornis ag.* BAIRD, Birds N. Am. 1858, 246, pl. lxxix, fig. 2: Rev. 218. *Trichas tephrocotis*, NUTT. Man. 2d ed. 1840, 462 (Chester Co., Penn.; top of head pure ash). — SAMUELS, 208.

SP. CHAR. *Spring male*. Upper parts and sides of the body uniform olive-green, very slightly tinged with ash on the crown. Sides of the head ash, tinged with dusky beneath the eye. (Entire head sometimes ash.) Chin and throat grayish-ash, gradually becoming darker to the upper part of the breast, where it becomes tinged with dark ash. Sides of the neck, breast, and body olive, like the back; rest of under parts light yellow. A broad continuous white ring round the eye. Wings and tail-feathers olive (especially the latter), without any trace of bars or spots. Bill brown above. Feet yellow. Length, 6 inches; wing, 3.00; tail, 2.25. *Female*. The olive-green reaching to the bill, and covering sides of head; throat and jugulum pale ashy-buff. *Young* not seen. Nesting unknown.

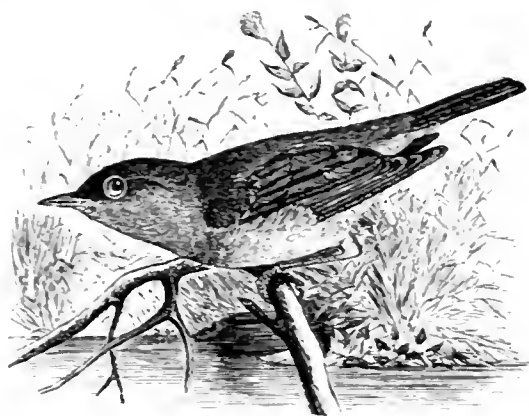
Autumnal specimen nearly uniform olive above; the throat tinged with brownish so as to obscure the ash.

HAB. Eastern Province of United States.

A specimen in the collection of the Philadelphia Academy, killed by Mr. Krider, has the darker ash of the jugulum of a decided sooty tinge.

A peculiarity in the history of this species is shown in the fact that it is quite abundant in Illinois, Wisconsin, etc., in the spring, and very rare in the autumn; precisely the reverse being the case near the Atlantic border, where only two or three spring specimens have been announced as captured by collectors. It is possible that they go north in spring, along the valley of the Mississippi, and return in autumn through the Atlantic States. Their summer abode and breeding-place are as yet unknown.

HABITS. Of the history of this rare and beautiful species but little is as yet known. It was first met with by Wilson, in the State of Connecticut, and he afterwards obtained two other specimens near Philadelphia. Others have since been procured at Carlisle, Penn., at Washington, Loudon County, Va., near Chicago, Racine, and in Southern Illinois. September 25 to October 1, and May, from the 15th to the 28th, appears to be the epoch of their fall and spring occurrence. They are more frequently noticed in the autumn. It is supposed to be a migratory bird, going north to breed.



Oporornis agilis.

It was found by Wilson, in every case, among low thickets, and seemed to be more than commonly active, not remaining for a moment in the same position. Mr. Audubon obtained only two specimens, a pair, opposite Philadelphia in New Jersey. When he first observed them they were hopping and skipping from one low bush to another, and among the tall reeds of the marsh, emitting an oft-repeated *tweet* at every move. They were chasing a species of spider that ran nimbly over the water, and which they caught by gliding over it. Upon dissecting them, he found a number of these spiders in their stomachs, and no other food. These two birds were not at all shy, and seemed to take very little notice of him, even when close to them.

Mr. Trumbull, in his list of the birds of Eastern Pennsylvania, marks it as a summer resident of that State, which is probably not the fact. Mr. Lawrence includes it in his list of birds found near New York City. It is not given by Mr. Verrill or Mr. Boardman as occurring in any part of Maine, and has not been detected in Western Massachusetts by Mr. Allen, though it has been occasionally met with in the eastern part of the State by Dr. Cabot, Mr. Maynard, and others. More recently, in the fall of 1870, and again in that of 1871, this species has been found quite abundant in a restricted locality in the eastern part of that State. It was first observed by Mr. H. W. Henshaw, a promising young naturalist, in the early part of September, 1870, among the Fresh Pond marshes in Cambridge. They appeared to be quite

numerous, and several specimens were obtained. He communicated the discovery to his friend, Mr. William Brewster, and more than fifty specimens of this rare Warbler were obtained during that season. In the following autumn, in September and during the first few days of October, these birds were observed in the same locality, apparently in greater numbers, and more specimens were obtained.

Mr. Henshaw writes me that he first saw this species, September 7, 1870, when he obtained a single specimen. From that time until September 27 it was very common throughout the Fresh Pond swamps, to which locality it seemed to be restricted. It again made its appearance in 1871, and at about the same time, and remained until October 5. It was in even greater numbers than during the preceding year.

Their habits, while with us in the fall, appear to be very different from those of the individuals observed by Wilson and Audubon, which were described as being of a remarkably lively disposition, and hence the name of *agilis*. Mr. Henshaw found them almost constantly engaged in seeking their food upon the ground. When startled, they would fly up to the nearest bush, upon which they would sit perfectly motionless, in a manner closely resembling the Thrushes. If not further disturbed, they immediately returned to the ground and resumed the search for food among the leaves. If greatly startled, they took a long flight among the bushes, and could rarely be found again. The only note he heard them utter was a single sharp chirp, emitted occasionally, when surprised. They were all remarkably fat, so much so as to make it difficult to obtain a good specimen.

About sunset, standing on the skirts of the swamp, he has repeatedly observed these birds alight, in great numbers, on the edge, and immediately pass in, evidently intending to remain there over night. He judged that they migrate entirely by day. On only one or two occasions did he observe these birds feeding in the tops of willow-trees. At such times they appeared equally lively in their movements with the *Dendroica striata*, in company with which they were associated. The birds he saw were nearly all in immature plumage, adults being comparatively rare.

Dr. Cones states that the Connecticut Warbler is found near Washington in the month of October, but that it is rather uncommon. He did not meet with it in spring. He speaks of its frequenting old buckwheat and corn fields, searching for food among the dry, rank weeds, and also in swampy places among low thickets.

Oporornis formosus, BAIRD.**KENTUCKY WARBLER.**

? *Sylvia æquinoctialis*, VIEILL. Ois. Am. Sept. II, 1807, 26, pl. lxxxi, Penn. (not of GMELIN).
Sylvia formosa, WILS. Am. Orn. III, 1811, 85, pl. xxv, fig. 3. — NUTT.; AUD. Orn. Biog. I, pl. xxxviii. *Sylvicola formosa*, JARD.; RICH.; BON.; MAX. *Myiodioides formosus*, AUD. Syn. — 1b. Birds Am. II, pl. lxxiv. — LEMBEYE, Av. Cuba, 1850, 37. GUNDLACH, Cab. Jour. 1861, 326 (Cuba). *Oporornis formosus*, BAIRD, Birds N. Am. 1858, 247; Rev. 218. — SCLATER & SALVIN, Ibis, I, 1859, 10 (Guatemala).

Other localities cited: *Mexico*, SCLATER. *Isthmus Panama*, LAWRENCE. *Veragua*, SALV. *Costa Rica*, LAWR.

SP. CHAR. *Adult male*. Upper parts and sides dark olive-green. Crown and sides of the head, including a triangular patch from behind the eye down the side of the neck, black, the feathers of the crown narrowly lunulated at tips with dark ash. A line from nostrils over the eye and encircling it (except anteriorly), with the entire under parts, bright yellow. No white on the tail. *Female* similar, with less black on the head. Length, 5 inches; wing, 2.95; tail, 2.25. *Young* not seen.

The adults in autumn are exactly the same as in spring.

HAB. Eastern Province of United States, north to Washington and Chicago; west to Republican Fork of Kansas River (CORES). Cuba, Guatemala, and Isthmus Panama. Not recorded from West Indies except Cuba.

HABITS. The Kentucky Warbler is an abundant species in the Southern and Southwestern States, and has been found, though more rarely, as far to the north as Southern New York in the east and to Southern Wisconsin in the west. It has also been obtained at Fort Riley, in Kansas. Its nest and eggs have been procured near Cleveland, O., by Dr. J. P. Kirtland, and also in Chester County, Penn., by Mr. Norris. It is a winter inhabitant in Mexico, Panama, Guatemala, and Cuba.

Wilson speaks of having met with this bird in abundance from Kentucky to the mouth of the Mississippi, everywhere quite common, but most especially so in the States of Tennessee and Kentucky. At the Balize he several times heard it twittering among the high rank grass of those solitary morasses. He found it frequenting low damp woods, and building its nest either in the middle of thick tufts of rank grass, in the fork of a low bush, or on the ground. The materials of which these nests were made were loose dry grass, mixed with the pith of wood, and lined with hair. He found the eggs from four to six in number, pure white, sprinkled with reddish specks. He met with the female sitting upon her eggs as early as May. These birds, he adds, are seldom seen among high branches, but prefer to frequent low bushes and canebrakes. In their habits they are very lively and sprightly. The song is loud, comprising three notes, and resembles *twedle-twedle-dweddle*. It makes its appearance in Kentucky from the South about the middle of April, and leaves the region about New Orleans on the approach of cold weather. Wilson was assured that it never remains there during the winter.

Wilson characterizes these birds as a reckless fighting species, almost always engaged in pursuing its fellows.

Mr. Audubon states that this Warbler is the most common and abundant species that visits the State of Louisiana and the whole region about the Mississippi River, but is not so common in Kentucky or Ohio. He describes it as an extremely lively and active bird, found in all the low grounds and damp places near watercourses, and generally among the tall rank weeds and low bushes growing in rich alluvial soil. It is continually in motion, hopping from stalk to stalk, and from twig to twig, preying upon insects, larvae, or small berries, rarely pursuing an insect on the wing. He describes its song as agreeable and emphatic. He has never known this species fly farther than a few yards at a time. Its flight is low, and is performed in a gliding manner. It makes its first appearance about the middle of March, and remains until the middle or last of September. He states that it rears two broods in a season. His description of its nest, as "small, beautifully constructed, and attached to several stems of rank weeds," etc., does not agree in position, size, or appearance with any that I have ever seen.

According to Mr. Audubon, it feeds largely upon spiders, which it obtains by turning over the withered leaves on the ground. The young birds resemble their mother until the following season, when the males attain the full beauty of their plumage. They remain with their parents until they migrate.

The late Dr. Alexander Gerhardt, an accurate and observing naturalist of Northern Georgia, informed me, by letter, that the nest of the Kentucky Warbler is usually built on the ground, under a tuft of grass, often on a hill-side and always in dry places. The eggs are deposited from the 4th to the 15th of May. Nearly all the nests he met with were made externally of a loose aggregation of dry oak and chestnut leaves, so rudely thrown together as hardly to possess any coherence, and requiring to be sewed to be kept in place. The interior or inner nests were more compactly interwoven, usually composed of fine dark-brown roots. Instead of being small, they are large for the bird, and are inelegantly and clumsily made. They measure four inches in their diameter, three in height, and two in the depth of their cavity. One nest, the last received from Dr. Gerhardt, obtained by him at Varnell's Station, in Northern Georgia, June 5, 1860, is large and peculiar in its construction. It is nearly spherical in shape, with an entrance partially on one side and nearly arched over. The periphery of this nest is composed exclusively of partially decayed deciduous leaves, impacted together, yet somewhat loosely. Within this outer covering is a fine framework of stems, twigs, and rootlets, and within this a snug, compact lining of hair and finer rootlets and fibres. This nest is six inches in diameter and five in height. It contained four eggs.

These eggs have an average length of .69 of an inch and a breadth of .56 of an inch. They have an oblong-oval shape, a crystalline-white ground, and the entire surface is sprinkled over with fine dots of red and reddish-brown. These, though most abundant about the larger end, are nowhere confluent, and do not form a crown.

A nest of this bird from Chester County, Penn., is a very flat structure, evidently built in a bed of fallen leaves. It has a diameter of six inches and a height of only two. The cup is a mere depression only half an inch in depth. Its base is loosely constructed of dried leaves, upon which is interwoven a coarse lining of long, dry, and wiry rootlets and stems of plants. It was given to Mr. J. P. Norris, from whom I received it, and it is now in the Boston collection.

Mr. Robert Ridgway furnishes the following valuable information in regard to the abundance and general habits of this species as observed in Southern Illinois: "It is a very common summer bird in Southern Illinois, where it arrives in the Wabash Valley towards the last of April. It is a wood-loving species, and of terrestrial habits, like the *Seiurus aurocapillus*, but generally frequents rather different situations from the latter bird, liking better the undergrowth of 'bottom' woods than that of dry forests. In all its manners it closely resembles the *Seiuri*, especially the two aquatic species, *ludovicianus* and *noveboracensis*, having the same tilting motion of the body, and horizontal attitude when perching, so characteristic of these birds. The nest I have never found, though well aware of its actual situation. I knew of one somewhere among the 'top' of a fallen tree, but it was so well concealed that the closest search did not enable me to discover it. In most cases the nest is probably on the ground, among the rubbish of fallen tree-tops, or low brush-wood.

"The usual note of this Warbler is a sharp *tship*, almost precisely like that of the Pewee (*Sayornis fuscus*), uttered as the bird perches on a twig near the ground, continually tilting its body, or is changed into a sharp rapid twitter as one chases another through the thicket. Their song is very pretty, consisting of a fine whistle, delivered very much in the style of the Cardinal Grosbeak (*Cardinalis virginianus*), though finer in tone, and weaker."

Dr. Coues found this Warbler rare at Washington, and chiefly in low woods with thick undergrowth, and in ravines. They were very silent, but not shy, and a few breed there.

SECTION GEOTHYLPEÆ.

GENUS GEOTHYLPIS, CABAN.

Trichas, SWAINSON, Zool. Journ. III, July, 1827, 167 (not of Gloger, March, 1827, equal to *Criniger*, Temm.).

Geothlypis, CABANIS, Wiegmann's Archiv, 1847, I, 316, 349. — Ib. Schomburgk's Reise, Guiana, 1848.

GEX. CHAR. Bill sylvicoline, rather depressed, and distinctly notched; rictal bristles very short or wanting. Wings short, rounded, scarcely longer than the tail; the first quill shorter than the fourth. Tail long; much rounded or graduated. Legs stout; tarsi elongated, as long as the head. Olive-green above, belly yellow. Tail-feathers immaculate. Legs yellow.

Synopsis of Species.

Throat yellow	Series I.
Throat ash	Series II.

Series I.

A. Black mask extending beneath the eye and on the auriculars.

1. *G. trichas*. Black mask bordered along its posterior edge with pale ashy or whitish; maxillæ black. Sexes dissimilar. ♀. Olive-brown above; throat only, distinctly yellow; no black mask. *Jar.* Without either black or pure yellow; above olive-brown, like ♀, beneath pale ochraceous-buff.

Abdomen almost always whitish; occiput russet-olive. Bill, from nostril, .30; tarsus, .70; wing, 2.25; tail, 2.15. *Hab.* Whole of United States; in winter most of West Indies, and Middle America, north to Guatemala var. *trichas*.

Colors similar; abdomen yellow. Bill, .45; tarsus, .90; wing, 2.50; tail, 2.50. *Hab.* Nassau; New Providence; Bahamas var. *rostrata*.¹

Abdomen bright yellow; occiput whitish-ash tinged with yellow. Bill, .32; tarsus, .75; wing, 2.45; tail, 2.50. *Hab.* Eastern Mexico (Jalapa?) var. *melanops*.²

2. *G. æquinoctialis*. Black mask not bordered posteriorly by ashy or whitish; much narrower on forehead than on auriculars; maxillæ yellow. Sexes similar.

Black of the auriculars bordered posteriorly by the olive-green of the neck. Bill, .17 deep; wing, 2.50; tail, 2.35. *Hab.* Northeast South America (Cayenne, Trinidad, etc.) var. *æquinoctialis*.³

Black of the auriculars bordered posteriorly by the ash of the crown. Bill, .14 deep; wing, 2.40; tail, 2.50. *Hab.* Brazil var. *velata*.⁴

B. Black mask not extending underneath the eye, but confined to lores and frontlet.

3. *G. poliocephala*. Bill much as in *Granatellus*. Above olive-green; the crown light ash; beneath yellow. Sexes dissimilar.

Eyelids white; nape and auriculars olive-green; abdomen whitish. Bill, .30, .15 deep; wing, 2.20; tail, 2.50. *Hab.* West Mexico (Matatlan) var. *poliocephala*.⁵

Eyelids black; nape and auriculars ashy; abdomen wholly yellow. Bill, .35, .18 deep; wing, 2.40; tail, 2.50. *Hab.* Guatemala (Retalhén) var. *caninucha*.⁶

Series II.

4. *G. philadelphia*. Head all round ashy; lores only, black. Sexes nearly similar.

¹ *Geothlypis rostratus*, BREVANT, Pt. Bost. Soc. N. H. March, 1867, 67, Inagua.

² *Geothlypis melanops*, BAIRD, Review Am. Birds, I, April, 1865, p. 222.

³ *Geothlypis æquinoctialis* (CARANIS), BAIRD, Rev. I, p. 224. (*Motacilla arq.* GMELIN, S. N. I, 1788, 972.)

⁴ *Geothlypis velata* (CARANIS), BAIRD, Rev. I, 223. (*Sylvia vel.* VIEILL. Ois. Am. Sept. II, 1807, 22, pl. lxxiv.)

⁵ *Geothlypis poliocephala*, BAIRD, Review Am. Birds, I, April, 1865, p. 225.

⁶ *Geothlypis poliocephala*, var. *caninucha*, RIDGWAY.

The *G. speciosa*, SCH. (P. Z. 1858, 447; and BAIRD, Rev. 1864, p. 223), from Mexico, and *G. semiflavus*, SCH. (P. Z. S. 1860, 273, 291. — BAIRD, Rev. I, 1864, 223), from Ecuador, are species allied to *G. trichas*, and possibly referable to it. The original descriptions afford no tangible distinctive characters. It is barely possible, however, that they are distinct.

Eyelids dusky (except in ♀); a black patch on jugulum of ♂. ♀. Throat tinged with yellow. *Hab.* Eastern Province of North America; in winter south to Panama var. *philadelphia*.
 Eyelids white; no black patch on jugulum. ♀. Throat not tinged with yellow. *Hab.* Western and Middle Province of United States; in winter south to Costa Rica (Western Coast) var. *macgillivrayi*.

Geothlypis trichas, CABAN.

MARYLAND YELLOW-THROAT; BLACK-MASKED GROUND WARBLER.

Turdus trichas, LINN. S. N. 1766, 293. *Sylvia trichas*, LATH.; AUD., etc. *Geothlypis trichas*, CAB. Mus. Hein. 1850, 16. — BAIRD, Birds N. Am. 241; Rev. 220. — GUNDLACH, Cab. Jour. 1861, 326 (Cuba). — SCLATER, Catal. 1861, 27, no. 167. — MARCH, Pr. A. N. Sc. 1863, 293. — LORD, Pr. R. Art. Inst. Woolwich, IV, 1864, 115 (N. W. Boundary). — JONES, Nat. Bermuda, 29. — SAMUELS, 205. — COOPER, Orn. Cal. I, 1870, 95. *Sylvia marilandica*, WILSON. *Trichas mar.* BON. *Regulus mystaceus*, STEPHENS. *Trichas personatus*, SWAINSON. *Sylvia roscoe*, AUD. *Trichas brachydactylus*, SWAINS.

Other localities quoted: *Xalapa, Oaxaca, Cordova, SCL. Guatemala, SCL. & SALV. Bahamas, BRYANT. Costa Rica, CAB.; LAW. Orizaba (autumn), SUM. Yucatan, LAW. Figures: VIEILL. Ois. II, pl. xxviii, xxix. — AUD. Orn. Biog. I, II, V, pl. xxiii, cii, cexl. — WILS. I, pl. vi, fig. 1. — BUFFON, Pl. enl. 709, fig. 2.*

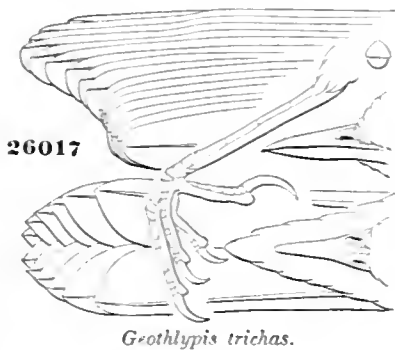
SP. CHAR. (No. 26,024 ♂.) Wings a little shorter than the somewhat graduated tail. Bill slender, the depth contained about two and a half times in distance from nostrils to tip. First quill about equal to seventh. Forehead to above the anterior edge of the eye, and across the entire cheeks, ears, and jaws, and ending in an angle on sides of neck, black, with a suffusion of hoary bluish-gray behind it on the crown and sides of neck: the occipital and nuchal region grayish-brown, passing insensibly into the olive-green of the upper parts. Chin, throat, jugulum, edge of wing and crissum rich yellow (the latter paler); rest of under parts, with lining of wings, yellowish-white, the sides tinged with brownish; outer primary edged with whitish, the others with olive-green. Bill black; legs yellowish. Total length, 4.40; wing, 2.15; tail, 2.30; graduation, .25; width of outer tail-feather, .28; difference between first and third quills, .15; length of bill from forehead, .52; from nostril, .30; along gape, .60; tarsus, .75; middle toe and claw, .66; claw alone, .18; hind toe and claw, .48; claw alone, .26.

Male in winter, and the female, without the black mask; the forehead tinged with brown, the yellow of the throat less extended, the eyelids whitish, and a yellowish superciliary line.

HAB. The whole United States, from Atlantic to Pacific, and south to Costa Rica; Bermuda (October); Bahamas; Cuba; Jamaica.

The young bird is brownish-olive above, becoming more virescent on the rump and tail; eyelids, and whole lower parts, soft light buff, with a faint tinge of yellow on the breast and lower tail-coverts.

There is very much variation manifested in a large series (containing more than one hundred and thirty specimens, principally North American), though



but very little that accords with any distinctions of habitat. As a rule, however, those from the Atlantic States are the smallest of the series, and have most white on the abdomen, the yellow being restricted to the throat and jugulum, and the lower tail-coverts. In most specimens from the Mississippi Valley the yellow beneath is quite continuous, and the size considerably larger than in the series above mentioned, in these respects approaching the *G. melanops* from Eastern Mexico, in which the yellow pervades the



Geothlypis trichas.

whole surface beneath; but in this the whitish border above the black mask is extended over the whole crown, leaving the nape only distinctly brownish, and the size larger than the average of the series alluded to. However, No. 61,135 ♂, Liberty County, Ga., has even more white on top of the head, the whole occiput being of this color; while No. 7,922 ♂, from Racine, Wis., is quite as long as the type of *melanops* (the tail only, shorter), and there is nearly as

much yellow beneath. The Georgia specimen, however, in other respects, is most like the Atlantic style. Specimens from the Pacific coast have just appreciably longer tails than Eastern ones, and the olive-green above is brighter. Jamaican and Guatemalan specimens are identical with many from the United States. The *G. rostratus* of Bryant, from the Bahamas, appears to be merely a gigantic insular race of the common species.

HABITS. This well-known and beautiful little Ground Warbler is a common, abundant, and widely diffused species, occurring throughout the United States from ocean to ocean, and from the Gulf of Mexico to Canada and Nova Scotia. It is found, during the winter months, in Cuba, Jamaica, Mexico, Yucatan, Guatemala, Costa Rica, the Bahamas, and, in the fall, in Bermuda. On the Pacific coast it has been found from Cape St. Lucas to the British territories. It breeds from Northern Georgia to Halifax, inclusive.

In Central America, Mr. Salvin states that this Warbler is by far the most common of the *Mniotiltida*, but is wholly migratory. It was usually found in the neighborhood of water, frequenting the reeds that surrounded Lake Duenas, and the bushes on the banks of its outlet. It was also taken by Mr. Boucard at Totontopce, among the mountains of Oaxaca, Mexico.

It was observed as far to the north as Lake of the Woods, by Mr. Kennicott. Several were there observed, both males and females, May 29. It is everywhere quite common, and is, I think, as numerous in New England as in the Middle States.

For the most part it seems to prefer wild lands, especially those overgrown with briars and low bushes, to open or cultivated grounds. Yet this preference is not exclusive, as I have known a pair, or their offspring, to visit the

same garden nine or ten successive summers. It is also more generally found in low lands than in high, and is probably attracted to moist thickets of briers and underbrush by the greater abundance of its favorite food. This Warbler is eminently terrestrial in its habits, never being found among higher limbs, but always either on the ground or among the lower branches of bushes, vines, and weeds. It is a diligent rather than an active or nimble bird, is always on the move, and incessantly in search of its food. This consists of insects in all their forms, but more particularly of larvæ, small beetles, and spiders. They are of great service in the destruction of several forms of injurious grubs, and but that their mode of life exposes them to destruction by prowling cats, I doubt not they would readily adapt themselves to living in our gardens. Occasionally they are found in fields of grain, where their presence is due to the abundance of destructive insects.

The Yellow-Throat appears shy and retiring because it prefers to move back and forth among low shrubs and brambles, where it most readily procures its food, but it is not a timid bird. They are unsuspecting, and will as readily permit as fly from the near presence of man. I have frequently had them approach within a few feet, especially when at rest; and even when in motion they will continue their lively song, as they move about from twig to twig. Though able to capture an insect on the wing, they are not expert fly-catchers, and chiefly take their prey when it is at rest.

Their song is a very lively and agreeable refrain, easily recognized, though exhibiting at times marked differences, and occasionally closely resembling the song of the Summer Yellow-Bird. The same brief series of notes, usually sounding like *whi-ti-tēē-tēē*, is constantly repeated at short intervals, while the singer continues his perpetual hunt for insects.

The male is very affectionate and devoted to both mate and offspring. The pair are never far apart, and during incubation the male is assiduous in the collection of food, feeding its mate, and afterwards assisting in collecting for their young. They rely upon concealment for the protection of their nest, and rarely show any open solicitude until it is discovered. Then they will make the most vehement demonstrations of alarm and distress, flying about the intruder and fearlessly approaching him to within a few feet. In Massachusetts they rarely, if ever, have more than one brood in a season. The young are able to take care of themselves early in July. At that time the song of the male ceases, or is abbreviated to a single *whit*, and parents and young form a family group and together hunt in the more secluded thickets, the edges of woods, and other retired places, for their food. Early in September they take their departure.

The Yellow-Throat is distributed, in suitable localities, over a large area, and wherever found is apparently equally common. Dr. Gerhardt found it quite abundant in Northern Georgia. Wilson and Audubon thought it more common in the Middle States than farther north, but I have found it quite as numerous about Halifax and Eastport as I have at Washington. Dr. Cooper

speaks of it as "very common" in Washington Territory, though not so abundant as McGillivray's Warbler. The same writer also states it to be a "very common bird" in California. Their earliest arrival at San Diego was on the 17th of April, about the time they reach Pennsylvania. They appear in New England early in May.

Their nest is almost invariably upon the ground, usually in a thick bed of fallen leaves, a clump of grass or weeds, at the roots of low bushes or briars, or under the shelter of a brush-pile. Occasionally it has been found among high weeds, built in a matted cluster of branches, four or five feet from the ground. Sometimes it is sunk in a depression in the ground, and often its top is covered by loose overlying leaves. I have never found this top interwoven with or forming any part of the nest itself.

The nest is usually both large and deep for the size of the bird, its loose periphery of leaves and dry sedges adding to its size, and it often has a depth of from five to six inches from its rim to its base. The cavity is usually three inches deep and two and a quarter wide. Generally these nests are constructed on a base of dry leaves. An external framework, rudely put together, of dry grasses, sedge leaves, strips of dry bark, twigs, and decaying vegetables, covers an inner nest, or lining, of finer materials, and more carefully woven. At the rim of the nest these materials sometimes project like a rude palisade or hedge. Usually the lining is of fine grasses, without hair or feathers of any kind.

In some nests the outer portion and base are composed almost entirely of fine dry strips of the inner bark of the wild grape.

The eggs vary from four to six in number, and also differ greatly in their size, so much so that the question has arisen if there are not two species, closely resembling, but differing chiefly in their size. Of this, however, there is no evidence other than in these marked variations in the eggs.

In the Great Basin, Mr. Ridgway found this bird abundant in all the bushy localities in the vicinity of water, but it was confined to the lower portions, never being seen high up on the mountains, nor even in the lower portions of the mountain cañons.

Their eggs exhibit a variation in length of from .55 to .72 of an inch, and in breadth from .48 to .58 of an inch; the smallest being from Georgia, and the largest from Kansas. They are of a beautiful clear crystalline-white ground, and are dotted, blotched, and marbled around the larger end with purple, reddish-brown, and dark umber.

Geothlypis philadelphia, BAIRD.**MOURNING WARBLER.**

Sylvia philadelphia, WILS. Am. Orn. 11, 1810, 101, pl. xiv; AUD. ; NUTT. *Trichas philadelphia*, JARD. — REINHARDT, Vidensk. Meddel. for 1853, and Ibis, 1861, 6 (Greenland). *Geothlypis phila.* BAIRD, Birds N. Am. 1858, 243, pl. lxxix, fig. 3; Rev. 226. — SCLATER, Catal. 1861, 27 (Orizaba). — LAWRENCE, Ann. N. Y. Lyc. 1861, 322 (Panama). — SAMUELS, 207. — DRESSER, Ibis, 1865, 476.

Figures: WILS. Am. Orn. 11, pl. xiv. — AUD. Birds Am. 11, pl. ci.

SP. CHAR. Wings but little longer than the tail, reaching but little beyond its base. *Adult male.* Head and neck all round, with throat and forepart of breast, ash-gray, paler beneath. The feathers of the chin, throat, and fore breast in reality black, but with narrow ashy margins more or less concealing the black, except on the breast. Lores and region round the eye dusky, without any trace of a pale ring. Upper parts and sides of the body clear olive-green; the under parts bright yellow. Tail-feathers uniform olive; first primary, with the outer half of the outer web, nearly white. *Female* with the gray of the crown glossed with olive; the chin and throat paler centrally, and tinged with fulvous; a dull whitish ring round the eye. Length, 5.50; wing, 2.45; tail, 2.25. *Young* not seen.

HAB. Eastern Province of United States to British America; Greenland; Southeastern Mexico, Panama R. R., and Colombia. Not recorded from West Indies or Guatemala. Costa Rica (LAWR.).

Specimens vary in the amount of black on the jugulum, and the purity of the ash of the throat. The species is often confounded with *Oporornis agilis*, to which the resemblance is quite close. They may, however, be distinguished by the much longer and more pointed wings, and more even tail, shorter legs, etc., of *agilis*. The white ring round the eye in the female *philadelphia* increases the difficulty of separation.

The adult male in autumn is scarcely different from the spring bird, there being merely a faint olive-tinge to the ash on top of the head, and the black jugular patch more restricted, being more concealed by the ashy borders to the feathers; the yellow beneath somewhat deeper.

HABITS. The Mourning Warbler was first discovered and described by Wilson, who captured it in the early part of June, on the borders of a marsh, within a few miles of Philadelphia. This was the only specimen he ever met with. He found it flitting from one low bush to another in search of insects. It had a sprightly and pleasant warbling song, the novelty of which first attracted his attention. For a long while Wilson's single bird remained unique, and from its excessive rarity Bonaparte conjectured that it might be an accidental variety of the Yellow-Throat. At present, though still of unfrequent occurrence, it is by no means a doubtful, though generally a comparatively rare species. Audubon mentions having received several specimens of this Warbler, procured in the neighborhood of Philadelphia, New York, and Vermont, all of which were obtained in the spring or summer months. He met with a single specimen in Louisiana, and thinks its habits closely resemble those of the Maryland Yellow-Throat.

Nuttall met with what he presumes to have been one of these birds in the Botanical Garden at Cambridge. It had all the manners of the Yellow-Throat, was busy in the search of insects in the low bushes, and, at intervals, warbled out some very pleasant notes, which partly resembled the lively chant of the *Trichas*, and in some degree the song of the Summer Yellow-Bird.

Professor Reinhardt states that two individuals of this species have been taken in Greenland, — one in Fiskerøsset, in 1846, and the other at Julianhaab, in 1853.

Mr. Turnbull gives it as still quite rare in Eastern Pennsylvania, arriving there in the middle of May on its way farther north. Mr. Lawrence includes it in his list of the birds of New York. Mr. Dresser obtained five specimens early in May, in Southern Texas.

It has been met with as far to the north as Greenland by Reinhardt, and in Selkirk Settlement by Donald Gunn. It has been procured in Eastern Mexico, in Panama, in Carlisle, Penn., Southern Illinois, Missouri, Nova Scotia, and various other places. It has been known to breed in Waterville, Me., and is not uncommon in Northwestern and Northern New York. A single specimen of this bird was obtained at Ocana, in Colombia, South America, by Mr. C. W. Wyatt.

Late in May, 1838, I have a note of having met with this species in Mount Auburn. The bird was fearless and unsuspecting, busily engaged, among some low shrubbery, in search of insects. It suffered our near presence, was often within a few feet, and was so readily distinguishable that my companion, with no acquaintance with birds, at once recognized it from Audubon's plates. Its habits were the exact counterpart of those of the Yellow-Throat. We did not notice its song.

Mr. Maynard states that, May 21, 1866, Mr. William Brewster shot a male of this species in Cambridge, on the top of a tall tree. Another specimen was taken at Franconia Mountains, New Hampshire, August 3, 1867. It was in company with four fully fledged young, which it was feeding. The young were shy, and could not be procured. The old bird was catching flies, after the manner of Flycatchers. Mr. Maynard has met this species but once in Massachusetts, and then in May, among low bushes and in a swampy place. He has since found it rather common at Lake Umbagog, Maine, in June, where it breeds. He states that it frequents the bushes along fences, stone walls, and the edges of woods. The male often perches and sings in the early morning on the top rail of a fence, or the dead branch of a tree. Its song he speaks of as loud and clear, somewhat resembling that of the *Sciurus noveboracensis*.

Mr. Paine considers this Warbler to be very rare in Vermont. He once observed a pair, with their young, at Randolph. The male was singing a quite pleasing, though somewhat monotonous song.

Mr. George Welch met with these birds in the Adirondack region, New York, in June, 1870. They seemed rather abundant, and were evidently breeding there. He obtained a single specimen.

Mr. John Burroughs, of Washington, was so fortunate as to obtain the nest and eggs of this Warbler near the head-waters of the Delaware River, in Roxbury, Delaware County, N. Y. "The nest," he writes me, "was in the edge of an old bark-peeling, in a hemlock wood, and was placed in some ferns about one foot from the ground. The nest was quite massive, its outer portions being composed of small dry stalks and leaves. The cavity was very deep, and was lined with fine black roots. I have frequently observed this Warbler in that section. About the head of the Neversink and Esopus, in the northwest part of Ulster County, New York, they are the prevailing Warbler, and their song may be heard all day long. Their song suggests that of the Kentucky Ground Warbler, but is not so loud and fine." Mr. Burroughs states elsewhere that "the eggs, three in number, were of light flesh-color, uniformly speckled with fine brown specks. The cavity of the nest was so deep that the back of the sitting bird sank below the edge."

Their eggs are of an oblong-oval shape, pointed at one end. They measure .75 by .55 of an inch. Their ground-color is a pinkish-white, and they are marked with dots and blotches, of varying size, of dark purplish-brown.

Geothlypis macgillivrayi, BAIRD.

MACGILLIVRAY'S GROUND WARBLER.

Sylvia macgillivrayi, AUD. Orn. Biog. V, 1839, 75, pl. ccxcix. *Trichas macg.* AUD. *Geothlypis macg.* BAIRD, Birds N. Am. 1858, 244, pl. lxxix, fig. 4; Rev. 227. — SCLATER, Catal. 1861, 27 (Jalapa and Guat.). — IB. P. Z. S. 1859, 363, 373 (Xalapa, Oaxaca). — CAB. Jour. 1861, 84 (Costa Rica). — COOPER & STICKLEY, P. R. R. Rep. XII, II, 1859, 177. — COOPER, Orn. Cal. I, 1870, 96. *Sylvicola macg.* MAX. Cab. Jour. VI, 1858, 118. *Sylvia tolmiæ*, TOWNS. J. A. N. Sc. 1839. *Trichas tolmiæ*, NUTT. Man. I. *Trichas vegeta* (LICHT.), BP. Consp. 1850, 310; *vide* Cab. Jour. 1861, 84 (Mexico).

SP. CHAR. *Adult male*. Head and neck all round, throat and forepart of the breast, dark ash-color; a narrow frontlet, loreal region, and space round the eye (scarcely complete behind), black. The eyelids above and below the eye (not in a continuous ring) white. The feathers of the chin, throat, and fore breast really black, with ashy-gray tips more or less concealing the black. Rest of upper parts dark olive-green (sides under the wings paler); of lower, bright yellow. *Female* with the throat paler and without any black. Length of male, 5 inches; wing, 2.45; tail, 2.45. *Young* not seen.

HAB. Western and Middle Provinces of United States, to northern boundary; east to Fort Laramie; south to Costa Rica.

The white eyelids of this species distinguish its males from those of *G. philadelphia*, in which there is a black jugular patch not seen in the present species. The females can only be known by the slenderer bill and more rounded wing, the first quill being intermediate between the fifth and sixth, instead of being considerably longer than the fifth.

The autumnal adult male is as described above, except that there is a faint tinge of green on the crown, and the ashy borders to feathers of throat and

jugulum broader, concealing more the black. The adult female in autumn is considerably more dully colored than in spring.

HABITS. This comparatively new Warbler was first met with by Townsend, and described by Audubon in the last volume of his Ornithological Biography. It has since been found to have a wide range throughout the western portion of North America, from Cape St. Lucas to British America, and from the Plains to the Pacific. It has also been obtained at Choapan in the State of Orizaba, Mexico, by Mr. Boucard, and in Guatemala by Mr. Salvin, who states that throughout the district between the volcanoes of Agua and Fuego this was a common species, frequenting the outskirts of the forests and the edges of the clearings. It breeds in abundance in Utah, Montana, Idaho, Oregon, Washington Territory, and probably also in Northern California.

Townsend first met with it on the banks of the Columbia. He states that it was mostly solitary and extremely wary, keeping chiefly in the most impenetrable thickets, and gliding through them in a cautious and suspicious manner. Sometimes it might be seen, at midday, perched upon a dead twig, over its favorite places of concealment, at such times warbling a very sprightly and pleasant little song, raising its head until its bill is nearly vertical.

Mr. Nuttall informed Mr. Audubon that this Warbler is one of the most common summer residents of the woods and plains of the Columbia, where it appears early in May, and remains until the approach of winter. It keeps near the ground, and gleans its subsistence among the low bushes. It is shy, and when surprised or closely watched it immediately skulks off, often uttering a loud *click*. Its notes, he states, resemble those of the *Seiurus aurocapillus*. On the 12th of June a nest was brought to Mr. Nuttall, containing two young birds quite fledged, in the plumage of the mother. The nest was chiefly made of strips of the inner bark of the *Thuja occidentalis*, lined with slender wiry stalks. It was built near the ground in the dead, moss-covered limbs of a fallen oak, and was partly hidden by long tufts of *usnea*. It was less artificial than the Yellow-Throat's nest, but was of the same general appearance. On his restoring the nest to its place, the parents immediately approached to feed their charge.

Dr. Suckley found this Warbler very abundant between the Cascade Mountains and the Pacific coast. Like all Ground Warblers it was entirely insectivorous, all the stomachs examined containing coleoptera and other insects. He did not find them shy, but as they frequented thick brush they were very difficult to procure.

Dr. Cooper found this species very common about Puget Sound, frequenting the underbrush in dry woods, occasionally singing a song from a low tree, similar to that of the Yellow-Throat. He found its nest built in a bush, a foot from the ground. It was of straw, loosely made, and without any soft lining. Dr. Cooper found this species as far east as Fort Laramie, in Wyoming. They reach the Columbia River by the 3d of May.

The same writer noticed the first of this species at Fort Mojave, April 24. He regarded their habits as varying in some respects from those of the *Trichas*, as they prefer dry localities, and hunt for insects not only in low bushes but also in trees, like the *Dendroica*. Dr. Cooper twice describes their eggs as white, which is inaccurate. He thinks that some of them winter in the warmer portions of California. He regards them as shy, if watched, seeking the densest thickets, but brought out again by their curiosity if a person waits for them, and the birds will approach within a few feet, keeping up a scolding chirp.

The nests of this species obtained by Dr. Kennerly from Puget Sound were all built on the ground, and were constructed almost exclusively of beautifully delicate mosses, peculiar to that country. They are shallow nests, with a diameter of four and a height of two inches, the cavity occupying a large proportion of the nest. Its walls and base are of uniform thickness, averaging about one inch. The nests are lined with finer mosses and a few slender stems and fibres.

Mr. Ridgway found these Warblers breeding in great numbers, June 23, 1869, at Parley's Park, Utah, among the Wahsatch Mountains. One of these nests (S. I., 15,238) was in a bunch of weeds, among the underbrush of a willow-thicket along a cañon stream. It was situated about eight inches from the ground, is cuplike in shape, two inches in height, three in diameter, and somewhat loosely constructed of slender strips of bark, decayed stalks of plants, dry grasses, intermixed with a few fine roots, and lined with finer materials of the same. The cavity is one and a half inches in depth, and two in diameter at the rim.

The eggs, four in number, are .75 of an inch in length and .50 in breadth. Their ground-color is a pinkish-white, marbled and spotted with purple, lilac, reddish-brown, and dark brown, approaching black. The blotches of the last color vary much in size, in one instance having a length of .21 of an inch, and having the appearance of hieroglyphics. When these spots are large, they are very sparse.

"This species," Mr. Ridgway writes, "inhabits exclusively the brush-wood along the streams of the mountain cañons and ravines. Among the weeds in such localities numerous nests were found. In no case were they on the ground, though they were always near it; being fixed between upright stalks of herbs, occasionally, perhaps, in a brier, from about one to two feet above the ground. The note of the parent bird, when a nest was disturbed, was a strong *chip*, much like that of the *Cyanospiza amana* or *C. cyanea*." He also states that it was abundant in the East Humboldt Mountains in August and in September, and also throughout the summer. A pair of fully fledged young was caught on the 21st of July.

SUBFAMILY ICTERIANÆ.

SECTION ICTERIEÆ.

In this section there are two American genera; one found in the United States, the other not. The diagnoses are as follows:—

Size large (about 8 inches). Lower jaw not deeper than upper anterior to nostrils.

Tail moderate. Partly yellow beneath, olive-green above *Icteria*.

Size smaller (about 6 inches). Lower jaw deeper than upper. Tail almost fan-

shaped. Partly red beneath, plumbeous-blue above *Granatellus*.¹

GENUS ICTERIA, VIEILL.

Icteria, VIEILLOT, Ois. Am. Sept. 1, 1807, iii and 85. (Type, *Muscicapa viridis*, GM.
Turdus virens, LINN.)

GEN. CHAR. Bill broad at base, but contracting rapidly and becoming attenuated when



Icteria virens.

viewed from above; high at the base (higher than broad opposite the nostrils); the culmen and commissure much curved from base; the gonys straight. Upper jaw deeper than the lower; bill without notch or rictal bristles. Nostrils circular, edged above with membrane, the feathers close to their borders. Wings shorter than tail, considerably rounded; first quill rather shorter than the sixth. Tail moderately graduated; the feathers rounded, but narrow. Middle toe without claw about two thirds the length of tarsus, which has

the scutella fused externally in part into one plate.

The precise systematic position of the genus *Icteria* is a matter of much contrariety of opinion among ornithologists; but we have little hesitation in including it among the *Sylviolidæ*. It has been most frequently assigned to the *Virconidæ*, but differs essentially in the deeply cleft inner toe (not half united as in *Virco*), the partially booted tarsi, the lengthened middle toe, the slightly curved claws, the entire absence of notch or hook in the bill, and the short, rounded wing with only nine primaries. The wing of *Virco*, when much rounded, has ten primaries,—nine only being met with when the wing is very long and pointed.

Of this genus only one species is known, although two races are recognized by naturalists, differing in the length of the tail.

¹ *Granatellus*, DUMES. BAIRD, Rev. Am. Birds, 1865, 230. (Type, *G. venustus*, DUMES.)

I. virens. Above olive-green; beneath gamboge-yellow for the anterior half, and white for the posterior. A white stripe over the eye.

Length of tail, 3.30 inches. *Hab.* Eastern United States to the Plains; in winter through Eastern Mexico to Guatemala var. *virens*.

Length of tail, 3.70 inches. *Hab.* Western United States from the Plains to the Pacific; Western Mexico in winter var. *longicauda*.

Icteria virens, BAIRD.

YELLOW-BREASTED CHAT.

Turdus virens, LINN. Syst. Nat. 10th ed. 1758, 171, no. 16 (based on *Ceanothe americana, pectore luteo*, Yellow-breasted Chat, CATESBY, Carol. I, tab. 50). *Icteria virens*, BAIRD, Rev. Am. B. 1864, 228. *Muscicapa viridis*, GMELIN, Syst. Nat. I, 1788, 936. *Icteria viridis*, BON. ; AUD. Orn. Biog. II, pl. cxxxvii. — BAIRD, Birds N. Am. 1858, 248. *Icteria dumicola*, VIEILL. *Pipra polyglotta*, WILS. ! *Icteria velasquezi*, BON. P. Z. S. 1837, 117 (Mexico). — SCLATER & SALV. Ibis, I, 1859, 12 (Guatemala).

Localities quoted : *Costa Rica*, CABAN. *Orizaba* (winter), SUM. *Yucatan*, LAWR.

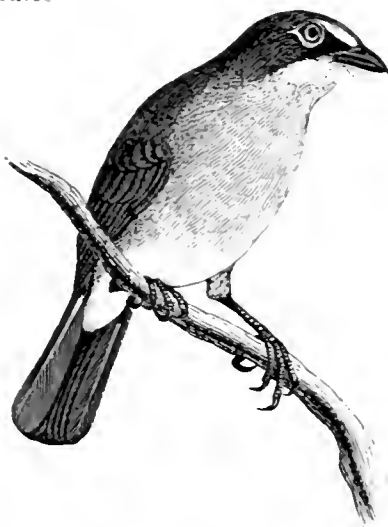
SP. CHAR. Third and fourth quills longest; second and fifth little shorter; first nearly equal to the sixth. Tail graduated. Upper parts uniform olive-green; under parts, including the inside of wing, gamboge-yellow as far as nearly half-way from the point of the bill to the tip of the tail; rest of under parts white, tinged with brown on the sides; the outer side of the tibiae plumbeous; a slight tinge of orange across the breast. Forehead and sides of the head ash, the lores and region below the eye blackish. A white stripe from the nostrils over the eye and involving the upper eyelid; a patch on the lower lid, and a short stripe from the side of the lower mandible, and running to a point opposite the hinder border of the eye, white. Bill black; feet brown. Female like the male, but smaller; the markings indistinct; the lower mandible not pure black. Length, 7.40; wing, 3.25; tail, 3.30. Nest in thickets, near the ground. Eggs white, spotted with reddish.

HAB. Eastern United States, west to Arkansas; rare north of Pennsylvania; south to Eastern Mexico and Guatemala. Not noticed in West Indies.

Both sexes in winter apparently have the base of lower mandible light-colored, the olive more brown, the sides and crissum with a strong ochraceous tinge. It is this plumage that has been recognized as *I. velasquezi*.

HABITS. The Yellow-breasted Chat is found throughout the Eastern United States, from Massachusetts to Florida, and as far to the west as Fort Riley and Eastern Kansas. Mr. Say met with it among the Rocky Mountains as far north as the sources of the Arkansas. It is not very rare in Massachusetts, but a few breed in that State as far north as Lynn. It has been found in Mexico and Guatemala, but not, so far as I am aware, in the West Indies.

Probably no one of our birds has more distinctly marked or greater pecu-



Icteria virens.

harities of voice, manners, and habits than this very singular bird. It is somewhat terrestrial in its life, frequenting tangled thickets of vines, briars, and brambles, and keeping itself very carefully concealed. It is noisy and vociferous, constantly changing its position and moving from place to place.

It is not abundant north of Pennsylvania, where it arrives early in May and leaves the last of August. The males are said always to arrive three or four days before their mates.

This species is described by Wilson as very much attached to certain localities where they have once taken up their residence, appearing very jealous, and offended at the least intrusion. They scold vehemently at every one who approaches or even passes by their places of retreat, giving utterance to a great variety of odd and uncouth sounds. Wilson states that these sounds may be easily imitated, so as to deceive the bird itself, and to draw it after one; the bird following repeating its cries, but never permitting itself to be seen. Such responses he describes as constant and rapid, and strongly expressive both of anger and anxiety, their voice, as it shifts, unseen, from place to place, seeming to be more like that of a spirit than a bird. These sounds Wilson compares to the whistling of the wings of a duck, being repetitions of short notes, beginning loud and rapid, and falling lower and lower. Again a succession of other notes, said to closely resemble the barking of young puppies, is followed by a variety of hollow, guttural sounds, each eight or ten times repeated, at times resembling the mewling of a cat, only hoarser,—all of these, as he states, uttered with great vehemence, in different keys and with peculiar modulations, now as if at a considerable distance, and the next moment as if close by your side; so that, by these tricks of ventriloquism, one is utterly at a loss to ascertain from what particular quarter they proceed. In mild weather this strange melody of sounds is kept up throughout the night during the first of the pairing-season, but ceases as soon as incubation commences.

They construct their nest about the middle of May. These are placed within a few feet of the ground, in the midst of low brambles, vines, and bushes, generally in a tangled thicket. They build a rude but strongly woven nest, the outer portions more loosely made of dry leaves; within these are interwoven thin strips of the bark of the wild grape, fibrous roots, and fine dry grasses.

The eggs, four or five in number, are usually hatched out within twelve days, and in about as many more the young are ready to leave their nest.

While the female is sitting, and still more after the young are hatched, the cries of the male are loud and incessant when his nest is approached. He no longer seeks to conceal himself, but rises in the air, his legs dangling in a peculiar manner, ascending and descending in sudden jerks that betray his great irritation.

The food of this bird consists chiefly of beetles and other insects, and of different kinds of berries and small fruit, and it said to be especially fond of wild strawberries.

Audubon states that in their migrations they move from bush to bush by day, and frequently continue their march by night. Their flight at all times is short and irregular. He also states that when on the ground they squat, jerk their tails, spring on their legs, and are ever in a state of great activity. Although the existence of this bird north of Pennsylvania is generally disputed, I have no doubt that it has always been, and still is, a constant visitor of Massachusetts, and has been found to within a score of miles of the New Hampshire line. Among my notes I find that a nest was found in Brookline, in 1852, by Mr. Theodore Lyman; in Danvers, by Mr. Byron Goodale; in Lynn, by Messrs. Vickary and Welch; and in many other parts of the State. It certainly breeds as far south as Georgia on the coast, and in Louisiana and Texas in the southwest. On the Pacific coast it is replaced by the long-tailed variety, *longicauda*.

A nest of this species from Concord, Mass., obtained by Mr. B. P. Mann, and now in the collection of the Boston Natural History Society, has a diameter of four inches and a height of three and a half. The cavity has a depth of two and a quarter inches, and is two and a half wide. This is built upon a base of coarse skeleton leaves, and is made of coarse sedges, dried grasses, and stems of plants, and lined with long, dry, and wiry stems of plants, resembling pine-needles. Another from Pomfret, Conn., obtained by Mr. Sessions, is a much larger nest, measuring five inches in diameter and three and three quarters in height. The cup is two and a half inches deep by three in width. It is made of an interweaving of leaves, bark of the grapevine, and stems of plants, and is lined with fine, long wiry stems and pine-needles.

Their eggs are of a slightly rounded oval shape, vary in length from .85 to .95 of an inch, and in breadth from .65 to .70. They have a white ground with a very slight tinge of yellow, and are marked with reddish-brown and a few fainter purplish and lilac spots.

Icteria virens, var. *longicauda*, LAWR.

LONG-TAILED CHAT.

Icteria longicauda, LAWRENCE, Ann. N. Y. Lyc. VI, April, 1853, 4. — BAIRD, Birds N. Am. 1858, 249, pl. xxxiv, fig. 2; Rev. 230. — SCLATER, Catal. 42, no. 253. — FINSCH, Abh. Nat. Brem. 1870, 331 (Mazatlan). — COOPER, Orn. Cal. I, 1870, 98. ? *Icteria auricollis* (LICHT. Mus. Berl.), BON. Consp. 1850, 331.

SP. CHAR. Similar to var. *virens*. Fourth quill longest; third and fifth shorter; first shorter than the seventh. Above ash-color, tinged with olive on the back and neck; the outer surface of the wings and tail olive. The under parts as far as the middle of the belly bright gamboge-yellow, with a tinge of orange; the remaining portions white. The superciliary and maxillary white stripes extend some distance behind the eye. Outer edge of the first primary white. Length, 7 inches; wing, 3.20; tail, 3.70.

Young (8,841. Loup Fork of Platte, August 5; F. V. Hayden). Above light grayish-

brown; beneath yellow on anterior half as in adult, but yellow less pure; rest of under parts (except abdomen) ochraceous; markings on head obsolete, the eyelids only being distinctly white.

HAB. Western and Middle Provinces of United States, east to Missouri River and Texas; Cape St. Lucas and Western Mexico.

The most tangible difference between this bird and typical *virens* consists in the longer tail. In addition, the upper plumage is grayish, with hardly any olive tinge, and the white maxillary stripe extends farther back; the bill is not so deep as that of the Eastern bird. All these differences, however, are in strict accordance with various laws; the more grayish cast of plumage is what we should expect in birds from the Middle Province, while the restriction of the yellow from the maxilla we see also in Western specimens of *Helminthophaga ruficapilla*; the longer tail, also, is a well-known characteristic of Western birds, as distinguished from Eastern of the same species.

Upon the whole, therefore, taking into consideration the absolute identity of their habits and notes, we can only consider the *I. longicauda* and *I. virens* as restricted, as being merely geographical races of one species.

This variety, as well as the Eastern, has in autumn and winter a slightly different plumage. A pair (53,348 ♂, and 53,347 ♀, West Humboldt Mountains, Nevada) obtained September 4 differ in the following respects from spring adults: the upper plumage is decidedly brown, with even a russet tinge, — not gray, with a greenish wash; the lores are less purely black, and the sides and crissum are deep cream-color, instead of pure white; the female has a shade of olive across the jugulum; both male and female have the lower mandible almost wholly white, and the commissure broadly edged with the same.

No. 38,402 ♂, Laramie Peak, June, has the throat and jugulum strongly stained with deep cadmium-orange.

HABITS. The Western or Long-tailed Chat has an exclusively Western distribution, and has been found from Mexico and Cape St. Lucas to Oregon, on the Pacific coast, and as far to the east as the Upper Missouri.

According to Dr. Cooper, these birds appear in San Diego and at Fort Mojave in the latter part of April. They are said to inhabit chiefly the warmer valleys near streams and marshes, rarely on the coast. At Fort Mojave, Dr. Cooper found a nest of this bird May 19, built in a dense thicket of algarobia. It contained three eggs, and one of the *Molothrus*. The nest was built of slender green twigs and leaves, lined with grass and hair. The eggs were white, sprinkled with cinnamon, somewhat in the form of a ring near the larger end, and measured .75 by .64 of an inch.

These nests were usually very closely concealed, but one that he found at Santa Cruz, near the coast, was in a very open situation, only two feet above the ground. When the nest is approached, the old birds are very bold, keeping up a constant scolding, and almost flying in the face of an intruder. At

other times they are very shy. The notes and sounds uttered by the Western bird Dr. Cooper states to be the same as those of the Eastern species, and with the same grotesqueness. They leave the State of California on or before the first of September.

Dr. Gambel states that the Chat appears in California about the middle of April, resorting to the hedges, vineyards, and bushy portions of gardens to breed.

Mr. Xantus found a nest of this bird (S. I., 896) at Fort Tejon, California, in May. It is a very symmetrical and exactly circular nest, six inches wide and three in height. The cavity has a diameter of three inches at the brim, and a depth of two. It is built of soft strips of bark, large stems, and branches of dry plants, leaves, twigs, and other vegetable substances. These are very neatly and compactly interwoven. The nest is elaborately lined with finer stems and flexible grasses. Another nest (S. I., 1816), obtained at Neosho Falls, Kansas, by Mr. B. F. Goss, is of irregular shape. Its height is four inches, and its diameter varies from three and three quarters to five inches. It was built in a depression in the ground, and its shape adapted to its location. The base is composed entirely of leaves, impacted when in a moist and decaying condition. Within these is interwoven a strong basket-like structure, made of long and slender stems, strips of bark, and fine rootlets, lined with finer grasses and stems of plants.

A nest of this species from Sacramento is composed, externally, of fine strips of inner bark of the grape and of deciduous trees, coarse straws, stems of plants, twigs, and dried remains of weeds, etc. It is lined with finer stems and long wiry roots, resembling hair. This nest has a diameter of four inches and a height of three. The cavity has a diameter of three inches at the rim, and a depth of two.

In regard to this variety Mr. Ridgway writes: "In no respect that I could discover does this Western bird differ from the Eastern in habits, manners, or notes. The nesting-habits are exactly the same."

The eggs of this species are, for the most part, larger than are those of the *virens*. They vary in length from .95 to 1.00 of an inch, and have an average breadth of .70 of an inch. Their markings do not differ essentially in shadings from those of the common species.

SUBFAMILY SETOPHAGINÆ.

GEN. CHAR. Sylvicoline birds with the characters of Flycatchers; the bill notched at tip, depressed and broad at the base, though quite deep: the rictus with well-developed bristles reaching beyond the nostrils, sometimes to the end of the bill. First quill rather less than the fourth, or still shorter. Size of the species rarely exceeding six inches. Colors red, yellow, and olive.

The species of this section resemble the small Flycatchers of the family

Tyrannidae in the structure of the bill, etc., and in the habit of capturing insects more or less on the wing, though they are more restless in their movements, seeking their prey among trees or in bushes, rapidly changing their place, instead of occupying a perch and returning to it after pursuing an insect through the air. The yellow or orange crown found in many species also carries out the analogy; but the strictly Oseine characters of the tarsal scutellæ and the nine primaries will serve to distinguish them.

The *Setophaginae* have their greatest development in Middle and South America, no less than nine genera and subgenera being on record, of which only two extend into the United States. Of one of these, *Setophaga*, we have only a single species of the many described; the other, *Myiodioides*, has no members other than those found in the United States.

The following diagnosis is prepared to distinguish our genera from the South American:—

A. Wings pointed; the first quill longer than the fifth; the third as long as or longer than the fourth. Tail nearly even, or slightly rounded (the difference of the feathers less than .20); the feathers broad and firm; the outer webs of exterior feathers narrow at base, but widening to nearly double the width near the end.

1. Bill from gape nearly as long as skull, broad at base and much depressed; rictal bristles reaching half-way from nostrils to tip. Culmen and commissure nearly straight. Wings equal to the tail. Tarsi long; toes short; middle toe without claw, about half the tarsus *Setophaga*.

2. Bill from gape nearly as long as skull, broad at base, but deep and more sylvicoline; rictal bristles reaching but little beyond nostrils. Culmen and commissure straight to the tip. Wings longer than the almost even tail. Middle toe without claw, three fifths the tarsus *Myiodioides*.

3. Bill from gape much shorter than head, wide at base, but compressed and high; the culmen and commissure much curved from base, scarcely notched at tip; rictal bristles reaching nearly half-way from nostrils to tip. Wings about equal to the almost even tail. Middle toe without claw, about three fifths the rather short tarsus *Cardellina*.

B. Wings rounded; the first quill shorter than in the preceding section; always less than the fifth. South American genera.¹

Several species of *Setophaginae* have, on not very well established grounds, been assigned to the southern borders of the United States. They are as follows:—

Cardellina rubra, BAIRD, Rev. Am. Birds, 1865, 264. (*Setophaga rubra*, SWAINSON.)
Parus leucotis, GILAUD, Birds Texas. *Hab.* Mexico. Rich carmine-red. Wing and tail-feathers brown. Ear-coverts silvery white. Length, 4.70; wing, 2.40; tail, 2.55.

Basileuterus culicivorus, BAIRD, Rev. Am. Birds, 1865, 246. (*Sylvia culicivora*, LACUR.)
Muscicapula brasiliensis, GILAUD, Texas Birds. *Hab.* Southern Mexico; Guatemala and Costa Rica. Top of head with two black stripes enclosing a median of yellow. Back olivaceous ash. Beneath entirely yellow. No rufous on side of head. Length, 4.90; wing, 2.40; tail, 2.25.

¹ Genera *Myioborus*, *Euthlypis*, *Myiothlypis*, *Basileuterus*, *Idiotes*, and *Ergaticus*. All Middle and South America.

Basileuterus belli, BAIRD, Rev. Am. Birds, 1865, 247. *Muscicapa belli*, GIRAUD, Texas Birds. *Hab.* Mexico and Guatemala. Top of head and face chestnut. A yellow superciliary stripe bordered above by dusky. Back olive; beneath yellow. Length, 5.10; wing, 2.28; tail, 2.50.

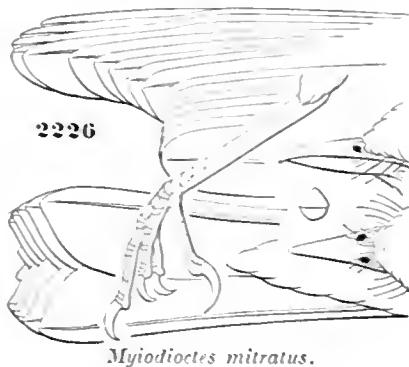
GENUS **MYIODIOCTES**, AUD.

Myiodioctes, AUDUBON, Synopsis, 1839, 48. (Type, *Motacilla mitrata*, GM.) — BAIRD, Birds N. Am. 1858, 291.

Wilsonia, BONAP. List. 1838 (preoccupied in botany).

Myioctonus, CABANIS, Mus. Hein. 1850, 18. (Type, *Motacilla mitrata*.)

GEN. CHAR. Bill broad, depressed; the lateral outlines a little concave; the bristles reaching not quite half-way from nostrils to tip. Culmen and commissure nearly straight to near the tip. Nostrils oval, with membrane above. Wings pointed, rather longer than the nearly even but slightly rounded tail; first quill shorter than the fourth, much longer than the fifth; the second and third quills longest. Tarsi rather lengthened, the scutellar divisions rather indistinct; the middle toe without claw, about three fifths the tarsus.



This genus is distinguished from *Setophaga* mainly by stouter feet and longer toes; shorter and more even tail, narrower bill, etc. The species are decidedly muscicapine in general appearance, as shown by the depressed bill with bristly rictus. The type *M. mitratus* is very similar in character of bill to *Dendroica castanea*, but the wings are much shorter; the tail longer and more graduated; the legs and hind toe longer, and the first primary shorter than the fourth (.15 of an inch less than the longest), not almost equal to the longest. The species are plain olive or plumbeous above, and yellow beneath. They may be grouped as follows:—

A. Tail with white patches on the inner feathers.

1. **M. mitratus**. Head and neck black. Front, cheeks, and under parts yellow. Back olive-green. *Hab.* Eastern Province of United States, south to Panama and West Indies.
2. **M. minutus**. Olive above; yellowish beneath. Two white bands on the wings. *Hab.* Eastern United States.

B. Tail without white patch on the outer feathers.

3. **M. pusillus**. Crown black. Forehead, cheeks, and under parts yellow. Back olive.

Yellow of forehead without an orange tinge; upper parts dull olive-green; pileum with very dull steel-blue lustre. *Hab.* Eastern Province and Rocky Mountains of North America, south to Costa Rica. var. *pusillus*.

Yellow of forehead with an orange cast; upper parts bright yellowish-green; pileum with a bright steel-blue lustre. *Hab.* Pacific Province of North America, from Sitka to Costa Rica. . . . var. *pileolata*

4. **M. canadensis**. Streaks on the crown, stripes on sides of head and neck, with pectoral collar of streaks, black. Rest of under parts, and line to and around the eye, yellow. Back bluish. *Hab.* Eastern Province of United States, south to Ecuador.

Myiodioides mitratus, AUD.**HOODED WARBLER.**

Motacilla mitratus, GIMLIN, S. N. I, 1788, 293. *Sylvia m.* LATH. ; VIEILL. ; BON. ; NUTT. ; AUD. Orn. Biog. II, pl. cx. *Sylvicola m.* MAX. *Sylcania m.* NUTTALL, Man. I, 1840, 333. *Setophaga m.* JARD. *Wilsonia m.* BON. 1838. — ALLEN, Pt. Essex Inst. 1864. *Myiodioides m.* AUD. Syn. 1839, 48. — IB. Birds Am. II, pl. lxxi. — SCLATER, P. Z. S. 1856, 291 (Cordova) ; 1858, 355 (Honduras). — BAIRD, Birds N. Am. 1858, 292 ; Rev. 239. — JONES, Nat. Bermuda, 1859, 26 (March). — SCLATER & SALVIN, Ibis, 1859, 11 (Guatemala). — LAWRENCE, Ann. N. Y. Lyc. VIII, 63 (Panama R. R.). — GUNDELACH, Cab. Jour. 1861, 326 (Cuba). — SAMUELS, 245. *Myioctonus m.* CAB. Mus. Hein. 1851. — IB. Jour. Orn. III, 1855, 472 (Cuba). *Muscicapra cucullata*, WILSON, III, pl. xxvi, fig. 3. *Muscicapra selbyi*, AUD. Orn. Biog. I, pl. ix.

SP. CHAR. *Male*. Bill black ; feet pale yellow. Head and neck all round and forepart of the breast black. A broad patch on the forehead extending round on the entire cheeks and ear-coverts, with the under parts, bright yellow. Upper parts and sides of the body olive-green. Greater portion of inner web of outer three tail-feathers white.

Female similar, but without the black ; the crown like the back : the forehead yellowish ; the sides of the head yellow, tinged with olive on the lores and ear-coverts. Throat bright yellow.

Length, 5.00 ; wing, 2.75 ; tail, 2.55. (Skin.)

HAB. Eastern Province of United States, rather southern : Bermuda ; Cuba ; Jamaica ; Eastern Mexico ; Honduras and Guatemala to Panama R. R. Orizaba (autumn, SUMICHRIST) ; Yucatan (LAWRENCE).

A young male in second year (2,245, Carlisle, Penn., May) is similar to the female, but the hood is sharply defined anteriorly, though only bordered with black, the olive-green reaching forward almost to the yellow ; there are only very slight indications of black on the throat. Apparently the male of this species does not attain the full plumage until at least the third year, as is the case with *Setophaga ruticilla*.

HABITS. This beautiful and singularly marked Warbler is a Southern species, though not exclusively so. It is more abundant in South Carolina than any other State, so far as I am aware. It is, however, found as far to the north as Northern New Jersey and Pennsylvania, and Southern New York, and, farther west, as far north as the shores of Lake Erie. It has also been found in Bermuda, Cuba, Jamaica, Eastern Mexico, Honduras, and Guatemala. Through-



Myiodioides mitratus

out Central America it appears to be abundant during the winter.

Mr. Audubon also states that it abounds in Louisiana and along the banks of the Mississippi and the Ohio. It occurs on the Hudson to some distance above New York. It appears from the South early in March, and has young already hatched, in Louisiana, early in May.

It is said to be one of the liveliest of its tribe, and to be almost constantly in motion. It is fond of secluded places, and is equally common in the thick canebrakes, both of the high and the low lands, and in the tangled undergrowth of impenetrable swamps. It has a peculiarly graceful manner of closing and opening its broad tail, that at once distinguishes it from every other bird, as it gambols from tree to tree, now in sight, and now hid from the eye, but ever within hearing.

Mr. Audubon adds that its call-note so closely resembles that of the *Spiza ciris* that it requires a practised ear to distinguish them. But its song is very different. This consists of three notes, and is loud, lively, and pleasing. This song is said to be made of sounds resembling the syllables *weet*, *weet*, *weetēē*. Extremely vocal in the early spring, it becomes nearly silent as soon as its brood is hatched. It resumes its song when its mate is again sitting on her eggs, as they have more than one brood in a season.

They are described as expert flycatchers, full of activity and spirit, flying swiftly after their insect prey, and catching the greater part on the wing. Their flight is low, gliding, and often protracted.

Mr. Bachman narrates a striking instance of its courage and conjugal devotion. While a pair of these Warblers were constructing a nest, a Sharp-shinned Hawk pounced upon and bore off the female. The male followed close after the Hawk, flying within a few inches and darting at him in all directions, and so continued until quite out of sight.

Wilson states that it builds a very neat and compact nest, generally in the fork of a small bush. It is formed of moss and flaxen fibres of plants, and lined with hair or feathers. The eggs, five in number, he describes as of a grayish-white, with red spots at the larger end. He noticed its arrival at Savannah as early as the 20th of March. Mr. Audubon adds that these nests are always placed in low situations, a few feet from the ground.

The late Dr. Gerhardt, of Varnell's Station, Georgia, informed me, by letter, that the Hooded Warbler deposits her eggs about the middle of May, laying four. The nest is not unlike that of the *Spiza cyanea*, but is larger. It is constructed of dry leaves and coarse grass on the outside, and within of dry pine-needles, interwoven with long yellow grasses and sometimes with horsehair. They are built, for the most part, in the neighborhood of brooks and creeks, in oak bushes, four or five feet from the ground. The female sits so closely, and is so fearless, that Dr. Gerhardt states he has sometimes nearly caught her in his hand.

In another letter Dr. Gerhardt describes a nest of this species as measuring three inches in height, three in external diameter, and an inch and a quarter in the depth of its cavity. Externally it was built of dry leaves and coarse grasses, lined inside with horsehair, fine leaves of pine, and dry slender grasses. It was constructed on a small oak growing in low bottom-land, and was three feet from the ground. The complement of eggs is four.

Mr. Ridgway states that this species is a common summer resident in the

bottom-lands along the Lower Wabash, in Southern Illinois, inhabiting the cane-brakes and the margins of bushy swamps.

The eggs of this Warbler are oval in shape, with one end quite pointed. They measure .70 by .50 of an inch. Their ground-color is a beautiful bright white, when the egg is fresh, strongly tinged with flesh-color. The spots are of a fine red, with a few markings of a subdued purple.

Myiodiotes minutus, BAIRD.

SMALL-HEADED FLYCATCHER.

Muscicapa minuta, WILSON, Am. Orn. VI, 1812, 62, pl. 1, fig. 5. — AUD. Orn. Biog. V, pl. cccxxxiv, fig. 3. — IB. Birds Am. I, pl. lxvii. *Sylvia minuta*, BON. *Wilsonia m.* BON. List, 1838. *Myiodiotes minutus*, BAIRD, Rev. Am. Birds, 1864, 241. *Sylvania pumilia*, NUTT. Man. I, 1840, 334.

SP. CHAR. Wings short, the second quills longest. Tail of moderate length, even. General color of upper parts light greenish-brown; wings and tail dark olive-brown, the outer feathers of the latter with a terminal white spot on the inner web; a narrow white ring surrounding the eye; two bands of dull white on the wings; sides of the head and neck greenish-yellow; the rest of the lower parts pale yellow, gradually fading into white behind. Male, 5 inches long; extent, 8.25 inches.

HAB. Eastern United States.

HABITS. All that is known in regard to this species we receive from Wilson and Audubon, and there is a decided discrepancy in their several statements. Wilson states that his figure was taken from a young male shot on the 24th of April, but in what locality he does not mention. He adds that he afterwards shot several individuals in various parts of New Jersey, particularly in swamps. He found these in June, and has no doubt they breed there.

Audubon claims that Wilson's drawing was a copy from his own of a bird shot by him in Kentucky on the margin of a pond. He throws a doubt as to the correctness of Wilson's statement that they have been found in New Jersey, as no one else has ever met with any there. That may be, however, and Wilson's statement yet be correct. The same argument carried out would reject the very existence of the bird itself, as no well-authenticated records of its occurrence since then can be found. They are at least too doubtful to be received as unquestionable until the genuine bird can be produced. Mr. Nuttall, it is true, states that Mr. Charles Pickering obtained a specimen of this bird many years ago, near Salem, Mass., and that he had himself also seen it in the same State, at the approach of winter. In the fall of 1836, when the writer resided in Roxbury, a cat caught and brought into the house a small Flycatcher, which was supposed to be of this species. It was given to Mr. Audubon, who assented to its correct identification, but afterwards made no mention of it. The presumption, therefore, is that we may have been mistaken.

In regard to its habits, Wilson represents it as "remarkably active, running, climbing, and darting about among the opening buds and blossoms with extraordinary agility." Audubon states that in its habits it is closely allied with the *pusillus* and the *mitratus*, being fond of low thick coverts in swamps and by the margin of pools. He also attributes to it a song of rather pleasing notes, enunciated at regular intervals, loud enough to be heard at the distance of sixty yards. These peculiarities seem to separate it from the true Flycatchers and to place it among the Warblers.

***Myiodioides pusillus*, BONAP.**

GREEN BLACK-CAPPED FLYCATCHER.

Muscicapa pusilla, WILSON, Am. Orn. III, 1811, 103, pl. xxvi, fig. 4. *Wilsonia pus.* BON. *Sylvania pus.* NUTT. *Myiodioides pus.* BON. Consp. 1850, 315. — SCLATER, P. Z. S. 1856, 291 (Cordova); 1858, 299 (Oaxaca Mts.; Dec.); 1859, 363 (Xalapa); 373. — IB. Catal. 1861, 34, no. 203. — BAIRD, Birds N. Am. 1858, 293 (in part); Rev. 240 (in part). — SCLATER & SALVIN, Ibis, 1859, 11 (Guatemala). — SAMUELS, 246. *Myioctonus pus.* CAB. M. H. 1851, 18. — IB. Jour. 1860, 325 (Costa Rica). *Sylvia wilsoni*, BON.; NUTT. *Muscicapa wilsoni*, AUD. Orn. Biog. II, pl. cxxiv. *Setophaga wilsoni*, JARD. *Myiodioides wilsoni*, AUD. Birds Am. II, pl. lxxv. *Sylvia pectusodes*, LICHT. Preis-Verz. 1830.

SP. CHAR. Forehead, line over and around the eye, and under parts generally, bright yellow. Upper part olive-green; a square patch on the crown lustrous-black. Sides of body and cheeks tinged with olive. No white on wings or tail. Female similar, the black of the crown replaced by olive-green. Length, 4.75; wing, 2.25; tail, 2.30.

HAB. Eastern portions of United States, west to the Snake and Humboldt Rivers: north to Alaska, south through Eastern Mexico and Guatemala to Costa Rica; Chiriqui (SALVIN).

HABITS. Wilson's Black-Cap is found throughout the United States from ocean to ocean, and as far to the north as Alaska and the Arctic shores, where, however, it is not common. Mr. Dall shot a specimen, May 30, on the Yukon River, where it was breeding. Mr. Bischoff obtained others with nests and eggs at Sitka, and afterwards found it more abundant at Kodiak. On the Pacific coast Dr. Suckley found it very abundant in the neighborhood of Fort Steilacoom, where it frequented thickets and small scrub-oak groves, in its habits resembling the *Helminthophaga cclatu*, flitting about among the dense foliage of bushes and low trees in a busy, restless manner. He describes its cry as a short *chit-chat* call. In California, Dr. Cooper notes their first arrival early in May, and states that they migrate along the coast, up at least to the Straits of Fuca. At Santa Cruz he noted their arrival, in 1866, about the 20th of April. They were then gathering materials for a nest, the male bird singing merrily during his employment. As they have been observed in Oregon as early as this, it has been conjectured that some may remain all winter among the dense shrubbery of the forests.

This bird winters in large numbers in Central America, where it is apparently very generally distributed. Mr. Salvin found it very common at Duenas. It was taken at Totontepec, among the mountains of Oaxaca, Mexico, by Mr. Boucard.

Mr. Ridgway found it very common during the summer and autumn months among the willows of the fertile river valleys, and among the rank shrubbery bordering upon the streams of the cañons of the higher interior range of mountains. It was found in similar situations with the *Dendroica aestiva*, but it was much more numerous. During September it was most abundant among the thickets and copses of the East Humboldt Mountains, and in Ruby Valley, at all altitudes, frequenting the bushes along the streams, from their sources in the snow to the valleys.

Wilson first met with and described this species from specimens obtained in Delaware and New Jersey. He regarded it as an inhabitant of the swamps of the Southern States, and characterized its song as "a sharp, squeaking note, in no wise musical." It is said by him to leave the Southern States in October.

Audubon states that it is never found in the Southern States in the summer months, but passes rapidly through them on its way to the northern districts, where it breeds, reaching Labrador early in June and returning by the middle of August. He describes it as having all the habits of a true Flycatcher, feeding on small insects, which it catches on the wing, snapping its bill with a sharp clicking sound. It frequents the borders of lakes and streams fringed with low bushes.

Mr. Nuttall observed this species in Oregon, where it arrived early in May. He calls it a "little cheerful songster, the very counterpart of our brilliant and cheerful Yellow-Bird." Their song he describes as like 'tsh-'tsh-'tsh-tshea. Their call is brief, and not so loud. It appeared familiar and unsuspecting, kept in bushes busily collecting its insect fare, and only varied its employment by an occasional and earnest warble. By the 12th of May some were already feeding their full-fledged young. Yet on the 16th of the same month he found a nest containing four eggs with incubation only just commenced. This nest was in a branch of a small service-bush, laid very adroitly, as to concealment, upon a mass of *Usnea*. It was built chiefly of hypnum mosses, with a thick lining of dry, wiry, slender grasses. The female, when approached, slipped off the nest, and ran along the ground like a mouse. The eggs were very similar to those of *Dendroica aestiva*, with spots of a pale olive-brown, confluent at the greater end.

A nest found by Audubon in Labrador was placed on the extremity of a small horizontal branch, among the thick foliage of a dwarf fir, a few feet from the ground and in the very centre of a thicket. It was made of bits of dry mosses and delicate pine twigs, agglutinated together and to the branches and leaves around it, from which it was suspended. It was lined with fine vegetable fibres. The diameter of the nest was three and a half and the

depth one and a half inches. He describes the eggs, which were four, as white, spotted with reddish and brown dots, the markings being principally around the larger end, forming a circle, leaving the extremity plain.

In this instance the parents showed much uneasiness at the approach of intruders, moving about among the twigs, snapping their bills, and uttering a plaintive note. In Newfoundland these birds had already begun to migrate on the 20th of August. He met with them in considerable numbers in Northern Maine in October, 1832. Mr. Turnbull mentions it as a rather abundant bird of Eastern Pennsylvania, appearing there early in May, *in transitu*, and again in October.

Mr. T. M. Trippe has observed this species at Orange, N. J., from the 19th to the 30th of May. It is said to keep low down in the trees, and is fond of haunting thickets and open brush fields. Occasionally he has heard it utter a loud chattering song, which it repeats at short intervals.

A nest of this species from Fort Yukon (Smith. Coll., 13,346), obtained May 20, by Mr. McDougal, contained four eggs. These varied from .60 to .63 of an inch in length, and from .45 to .49 in breadth. They were obovate in shape, their ground-color was a pure white; this was finely sprinkled round the larger end with brownish-red and lilac. No mention is made of the position of the nest, but it is probable this bird builds on the ground.

***Myiodioctes pusillus*, var. *pileolatus*, RIDGWAY.**

Motacilla pileolata, PALLAS, Zoög. Rosso Asiat. I. 1831, 497 (Russian America). *Myiodioctes pusillus*, var. *pileolatus*, RIDGWAY, Report U. S. Geol. Expl. 40th Par. *Myiodioctes pusillus*, AUCT. (all citations from Pacific coast of North and Middle America). — LORD, Pr. R. Art. Inst. Woolw. IV, 1864, 115 (Br. Col.). — DALL & BANNISTER (Alaska). — COOPER, Orn. Cal. I, 1870, 101.

SP. CHAR. Similar to var. *pusillus*, but much richer yellow, scarcely tinged with olive laterally, and deepened into an almost orange shade on the front and chin. Above much brighter and more yellowish olive-green. The black pileum with a brighter steel-blue gloss. Bill much narrower, and deep, light brown above, instead of nearly black. Measures (4,222 ♂, San Francisco, Cal.), wing, 2.15; tail, 2.00.

HAB. Pacific coast region of North America, from Kodiak (Alaska); south through Western Mexico (and Lower California) to Costa Rica.

This is an appreciably different race from that inhabiting the eastern division of the continent; the differences, tested by a large series of specimens, being very constant.

A Costa-Rican specimen before me is almost exactly like specimens from California.

HABITS. The remarks in the preceding article relative to specimens from the Pacific coast belong to this variety.

Myiodioides canadensis, AUD.**CANADA FLYCATCHER.**

Muscicapa canadensis, LINN. Syst. Nat. I, 1766, 327. (*Muscicapa canadensis cinerea*, BRIS-
SON, II, 406, tab. 39, fig. 1.) — GILLIN. — WILSON, III, pl. xxvi, fig. 2. — AUD. Orn.
Biog. II, pl. ciii. *Setophaga can.* SWAINSON; RICH.; GRAY. *Myiodioides can.* AUD.
Birds Am. II, pl. ciii. — BREWER, Pr. Bost. Soc. VI, 5 (nest and eggs). — SCLATER,
P. Z. S. 1854, 111 (Ecuador; winter); 1855, 143 (Bogota); 1858, 451 (Ecuador). —
IB. Catal. 1861, 34, no. 204. — SCLATER & SALVIN, His. 1859, 11 (Guatemala). —
LAWRENCE, Ann. N. Y. Lyc. VI, 1862. — BAIRD, Birds N. Am. 1858, 294; Rev. 239.
— SAMUELS, 247. *Euthlypis can.* CAR. Mus. Hein. 1850, 1851, 18; Jour. Orn. 1860,
326 (Costa Rica). *Sylvia pardalina*, BON.; NUTT. *Sylvicola pardalina*, BON. *Myio-
dioides pardalina*, BON. *Muscicapa bonapartei*, AUD. Orn. Biog. I, 1831, 27, pl. v.
Setophaga bon. RICH. *Wilsonia bon.* BON. *Sylvania bon.* NUTT. *Myiodioides bon.*
AUD. Syn. — IB. Birds Am. II, 1841, 17, pl. xvii. — BAIRD, Birds N. Am. 1858, 295.
Setophaga nigricincta, LAFR. Rev. Zool. 1843, 292; 1844, 79.

SP. CHAR. Upper part bluish-ash; a ring around the eye, with a line running to the
nostrils, and the whole under part (except the tail-coverts, which are white), bright yellow.
Centres of the feathers in the anterior half of the crown, the cheeks, continuous with a
line on the side of the neck to the breast, and a series of spots across the forepart of the
breast, black. Tail-feathers unspotted. Female similar, with the black of the head and
breast less distinct. In the young obsolete. Length, 5.34; wing, 2.67; tail, 2.50.

HAB. Whole Eastern Province of United States, west to the Missouri; north to Lake
Winnipeg; Eastern Mexico to Guatemala, and south to Bogota and Ecuador (SCLATER).
Not noted from West Indies.

HABITS. This is a migratory species, abundant during its passage, in
most of the Atlantic States. It breeds, though not abundantly, in New
York and Massachusetts, and in the regions north of latitude 42°. How far
northward it is found is not well ascertained, probably as far, however, as the
wooded country extends. It was met with on Winnipeg River, by Mr. Ken-
nicott, the second of June. It winters in Central and in Northern South
America, having been procured at Bogota, in Guatemala, and in Costa Rica,
in large numbers.

Mr. Audubon states that he found this bird breeding in the mountainous
regions of Pennsylvania, and afterwards in Maine, New Brunswick, Nova
Scotia, Newfoundland, and Labrador. Although he describes with some mi-
nuteness its nests, yet his description of their position and structure is so
entirely different in all respects from those that have been found in Massa-
chusetts, that I am constrained to believe he has been mistaken in his iden-
tifications, and that those he supposed to belong to this species were really
the nests of a different bird.

"In Vermont," Mr. Charles S. Paine, of Randolph, informs me, "the Can-
ada Flycatcher is a summer visitant, and is first seen about the 18th of May.
They do not spread themselves over the woods, like most of our small fly-
catching birds, but keep near the borders, where there is a low growth of
bushes, and where they may be heard throughout the day singing their regu-

lar chant. A few pairs may occasionally be found in the same neighborhood. At other times only a single pair can be found in quite a wide extent of territory of similar character. They build their nests, as well as I can judge, about the first of June, as the young are hatched out and on the wing about the last of that month, or the first of July. I have never found a nest, but I think they are built on the ground. They are silent after the first of July, and are rarely to be seen after that period." The song of this bird is a very pleasing one, though heard but seldom, and only in a few localities in Massachusetts.

Near Washington Dr. Cones found the Canada Flycatcher only a spring and autumnal visitant, at which seasons they were abundant. They frequented high open woods, and kept mostly in the lower branches of the trees, and also in the more open undergrowth of marshy places. They arrive the last week in April and remain about two weeks, arriving in fall the first week in September, and remaining until the last of that month.

The first well-identified nest of this bird that came to my knowledge was obtained in Lynn, Mass., by Mr. George O. Welch, in June, 1856. It was built in a tussock of grass, in swampy woods, concealed by the surrounding rank vegetation, in the midst of which it was placed. It was constructed entirely of pine-needles and a few fragments of decayed leaves, grapevine bark, fine stems, and rootlets. These were so loosely interwoven that the nest could not be removed without great care to keep its several portions together. Its diameter was three and a half inches, and it was very nearly flat. Its greatest depth, at the centre of its depression, was hardly half an inch. It contained four young, and an unhatched egg.

Another nest found in June, 1864, by the same observing naturalist, was also obtained in the neighborhood. This was built in a tussock of meadow-grass, in the midst of a small boggy piece of swamp, in which were a few scattered trees and bushes. The ground was so marshy that it could be crossed only with difficulty, and by stepping from one tussock of reedy herbage to another. In the centre of one of these bunches the nest was concealed. It measures six inches in its larger diameter, and has a height of two and a quarter inches. The cavity of this nest is two and three quarters inches wide, and one and three quarters deep. It is very strongly constructed of pine-needles, interwoven with fine strips of bark, dry deciduous leaves, stems of dry grasses, sedges, etc. The whole is firmly and compactly interwoven with and strengthened around the rim of the cavity by strong, wiry, and fibrous roots. The nest is very carefully and elaborately lined with the black fibrous roots of some plant. The eggs, which were five in number, measure .72 of an inch in length by .56 in breadth. Their ground-color is a clear and brilliant white, and this is beautifully marked with dots and small blotches of blended brown, purple, and violet, varying in shades and tints, and grouped in a wreath around the larger end.

GENUS **SETOPHAGA**, SWAINS.

Setophaga, SWAINSON, Zool. Jour. III, Dec. 1827, 360. (Type, *Muscicapa ruticilla*, L.) —
BAIRD, Birds N. Am. 1858, 297. *Sylvania*, NUTTALL, Man. Orn. I, 1832. (Same type.)

GEN CHAR. Bill much depressed, the lateral outlines straight towards tip. Bristles



Setophaga ruticilla, Sw.

reach half-way from nostril to tip. Culmen almost straight to near the tip; commissure very slightly curved. Nostrils oval, with membrane above them. Wings rather longer than tail, pointed; second, third, and fourth quills nearly equal; first intermediate between fourth and fifth. Tail rather long, rather rounded; the feathers broad, and widening at ends, the outer web narrow. Tarsi with scutellar divisions indistinct externally. Legs slender; toes short, inner cleft nearly to base of first joint, outer with first joint adherent; middle toe without claw, not quite half the tarsus.

The genus *Setophaga* is very largely represented in America, although of the many species scarcely any agree exactly in form with the type. In the following diagnosis I give several species, referred to, perhaps erroneously, as occurring in Texas.

Belly white. End of lateral tail-feathers black. Sexes dissimilar.

Ground-color black, without vertex spot. Sides of breast and bases of quills and tail-feathers reddish-orange in male, yellowish in female *ruticilla*.

Belly vermilion or carmine red. Lateral tail-feathers, including their tips, white. Sexes similar.

Entirely lustrous black, including head and neck. No vertex spot. A white patch on the wings *picta*.¹

Plumbeous-ash, including head and neck. A chestnut-brown vertex spot.

No white on wings *miniata*.²

Setophaga ruticilla*, SWAINS.*AMERICAN REDSTART.**

Motacilla ruticilla, LINN. Syst. Nat. 10th ed. 1758, 186 (Catesby, Car. tab. 67). *Muscicapa ruticilla*, LINN.; GMELIN; VIEILLOR; WILS.; BON.; AUD. Orn. Biog. I, pl. xl. *Setophaga rut.* SWAINS. Zool. Jour. III, 1827, 358. — BON.; AUD. Birds Am. — SCLATER, P. Z. S. (Ecuador, Bogota, Cordova, Oaxaca, City of Mexico). — SCLATER & SALVIN, Ibis, 1859, 12 (Guatemala). — BAIRD, Birds N. Am. 1858, 297; Rev. 256. — MAX.; SALLÉ, P. Z. S. 1857 (St. Domingo). — NEWTON, Ibis, 1859, 143 (St. Croix; winter). — CAB. Jour. 1856, 472 (Cuba); 1860, 325 (Costa Rica). — GUNDELACH, ib. 1861, 326 (Cuba). — BRYANT, Pr. Bost. Soc. VII, 1859 (Bahamas). — LAWRENCE, Ann. N. Y. Lyc. 1861, 322 (Panama R. R.). — SAMUELS, 249. *Sylvania rut.* NUTTALL, Man. I, 1832, 291 (type of genus). *Motacilla flavicauda*, GMELIN, I, 1788, 997 (♀).

¹ *Setophaga picta* (SWAINSON), BAIRD, Rev. 1865, 256. *Muscicapa leucamus*, GIRAUD, Texas Birds. Hab. Mexico and Guatemala.

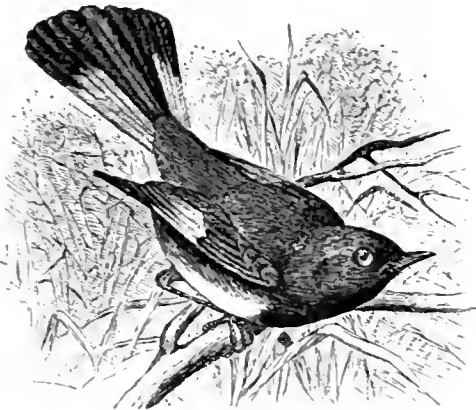
² *Setophaga miniata* (SWAINSON), BAIRD, Rev. 1865, 256. *Muscicapa derhami*, GIRAUD, Texas Birds. Hab. Mexico.

SP. CHAR. *Male*. Prevailing color black. A central line on the breast, the abdomen, and under tail-coverts white; some feathers in the latter strongly tinged with dark brown. Bases of all the quills except the inner and outer, and basal half of all the tail-feathers except the middle one, a patch on each side of the breast, and the axillary region, orange-red, of a vermilion shade on the breast. *Female* with the black replaced by olive-green above, by brownish-white beneath, the red replaced by yellow; the head tinged with ash; a grayish-white lore and ring round the eye. Length, 5.25; wing, 2.50; tail, 2.45.

HAB. Eastern and in part Middle Provinces of North America to Fort Simpson, west to Great Salt Lake; Fort Laramie; Denver City; most of the West Indies; Mexico to Ecuador.

The young male in early autumn greatly resembles in plumage the adult female, but has the upper tail-coverts and tail deep black, sharply contrasted with the olive of the rump, instead of having the upper tail-coverts olive, the tail simply dusky; in addition the back is more greenish-olive, and the abdomen and crissum pure white. The male does not obtain the perfect adult plumage until about the third year.

HABITS. The so-called Redstart has an extended distribution from the Atlantic to the Rocky Mountains, and from Florida to high northern latitudes, having been found breeding at Fort Simpson by Mr. Ross, and at Fort Resolution by Mr. Kennicott and Mr. Lockhart. It is generally abundant in suitable localities, and probably breeds wherever found north of the Potomac. It winters in large numbers in Guatemala and in other parts of Central America, as well as in the West Indies. It is common in St. Croix in the spring, and is especially seen about houses, according to Newton. It remains there until the end of April.



Setophaga ruticilla.

Richardson found this species abundant on the Saskatchewan, as far to the north as the fifty-eighth parallel. It appeared there the last of May, and left early in September. He found it frequenting moist, shady lands, flitting about among the moss-grown and twisted stems of the tall willows that skirt the marshes. It was easily recognized by the red lining of its wings as it flitted through the gloomy shades in pursuit of mosquitoes and other winged insects.

Among the memoranda of the late Mr. Kennicott, we find two to the effect that on the 26th of May he found both males and females of this species common near Rainy Lake, and that on the 6th of June he also observed these birds near Lake Winnipeg. June 14, at Fort Resolution, he obtained a female Redstart with nest and four eggs. The nest was built in the fork of a willow, in a thick but low wood of alder and willow. It was entirely unprotected by leaves or branches. The female was taken on the nest.

The Newtons found this a very common species in St. Croix, in the spring

of the year, and it was especially seen about houses. For about a week, at the end of April, 1857, they were extremely numerous. On their return from their summer quarters, they were first observed September 6. Mr. Taylor also mentions them as common in Trinidad. Mr. Ridgway found it a common species among the willow thickets of the river valleys, west as far as the Great Salt Lake.

This species, in its spring and autumnal migrations, is abundant in Louisiana and Texas, as well as in the Gulf States. Wilson speaks of meeting with it in the then "Mississippi Territory." Audubon gives it as abundant in Louisiana, and Nuttall as found throughout Louisiana and Arkansas into Mexico. Mr. Dresser also mentions it as very common near San Antonio in the spring and autumn, arriving on the Medina the 27th of April.

Dr. Coues says that the Redstart near Washington is chiefly a spring and autumnal visitant, and but very few remain to breed. In the spring it is very abundant from April 25 to May 20, and in the fall from the 1st to the 20th of September, in all woody and swampy situations. He found it in the habit of running along slender twigs, sideways, and having a note very similar to that of *D. ustula*.

Although placed among the *Oscines*, where, as an excellent singer, it clearly has a good right to be classed, it is yet also a true Flycatcher in habits and manners. It is a lively, active bird, ever on the wing, and continually in pursuit of insects. In this pursuit it never awaits the approach of its prey, but, espying them at a distance, darts with great velocity in pursuit, and the continued clicks of its bill attest the rapidity and frequency with which it will overtake and catch insect after insect. Even when lamenting the loss of a part of its brood, and flying around with cries of distress, the sight of passing insects is a temptation not to be resisted, and the parent bird will stop her lamentations to catch small flies.

Its notes are a varied twitter, rather than a song, a repetition of two simple notes, uttered every few seconds as it seeks its prey, flying among the thick foliage usually in dense groves. Its common habit is to glide along a branch, between its smaller twigs, at times darting forth into more open spaces in quest of insects it has espied.

Their nests are usually, though not always, built in a low branch, eight or ten feet from the ground, in the midst of a thick grove. I have known it to build in an open field and in close proximity to a dwelling. It keeps to groves and thickets, and frequents moist places rather than dry, evidently because of the greater abundance of insects, and not because of timid or retiring habits. It is indeed far from being timid, and will permit a near approach without any exhibitions of uneasiness. When its nest is visited, the male bird manifests great disturbance, and flies back and forth around the head of the intruder with cries of distress. The female is far less demonstrative, and even when her nest is despoiled before her eyes is quite moderate in the expression of her grief.

Its flight is graceful, easy, and rapid, varied by circumstances as it glides in its intricate course among small interlacing branches, or darts rapidly forth into more open space. As it moves, it is continually opening out, closing, or flirting from side to side its conspicuous tail, the white spots in its expanded feathers constantly appearing and disappearing.

In the construction of the nest there is a general uniformity of character, although the materials differ and the localities are far apart. They are never pendent, but are placed among three or more small upright branches, around which it is firmly woven with vegetable flax-like fibres. A nest obtained in Lynn, by Mr. George O. Welch (S. I. 3,778), in June, measures two inches in height by three in diameter. It is a small, compact, and homogeneous nest, composed almost entirely of shreds of savin-bark intermixed with soft vegetable wool. Within are loosely intertwined minute vegetable fibres and strips of bark, and a lining of horsehair, fine pine leaves, and dry grasses. The nest contained four eggs. Another nest found in Grand Menan, June 24, 1851, was very similar in size, structure, and materials. It was in the centre of a thick, swampy thicket, five feet from the ground, and contained five eggs.

Another nest of this bird, obtained in Lynn by Mr. Welch, is only a reconstruction of a nest begun by a pair of *Dendroica aestiva*, and either abandoned by them, or from which they had been driven. Above the original nest of the Warbler the Redstarts had constructed their own. The base is composed of the downy covering of the under sides of the leaves of ferns, mixed with a few herbaceous stems and leaves. Within this was built an entirely distinct nest, composed of long and slender strips of bark, pine-needles, and stems of grasses. These are firmly and elaborately interwoven together.

A nest found in Hingham, built in a tree in an open space near a dwelling, was seven feet from the ground, and of the usual size and shape. In this the more usual strips of bark were replaced by hempen fibres of vegetables, thistle-down, bits of newspaper, and other fragments. Within is a strong lining of hair and fine stems of grasses. In this nest there were two young, about half fledged, and two eggs nearly fresh. The latter were taken, the female parent being present and making only a very slight protest, stopping, from time to time, to catch insects.

The eggs of the Redstart vary considerably in their size and in their general appearance, but resemble somewhat those of the common Summer Yellow-Bird. They vary in length from .55 to .68 of an inch, and in their breadth from .45 to .53. Their ground-color is a grayish-white, blotched and dotted with purple, lilac, and brown.

FAMILY HIRUNDINIDÆ. — THE SWALLOWS.

CHAR. Bill short, triangular, very broad at base (nearly as wide as long) and much depressed, narrowing rapidly to a compressed, notched tip; mouth opening nearly to the eyes. Primaries nine, graduating rapidly less from the exterior one; tail-feathers twelve. Feet weak; tarsi scutellate, shorter than middle toe and claw. Number of joints in toes normal; basal joint of middle toe partially or entirely adherent to lateral toes. Wings long, falcate. Tail forked. Eyes small. Plumage compact, usually lustrous. All the American species with a white patch on the sides under the wing, and with the irids hazel or brown.

The *Hirundinidæ* form a very well marked group of birds easily distinguished from all others. They exhibit a close resemblance, in external appearance and habits, to the *Cypselidæ*; from which, apart from the internal structure, they are readily distinguished by the possession of nine, instead of ten primaries; twelve, instead of ten tail-feathers; scutellate tarsi, toes with normal number of joints (1, 2, 3, and 4, respectively, exclusive of ungual phalanges), instead of a different proportion; differently shaped nostrils, etc. In both families the wings are developed to an extraordinary degree: the outer primary nearly twice or more than twice the length of the inner, and enabling its possessor to sustain flight almost indefinitely. The relations of the family among the *Oscines* appear closest to the Old World *Muscicapidæ*.

In comparing the wings of the *Hirundinidæ* with those of the *Cypselidæ*, we readily notice one of the essential characters of the *Oscines*, namely, that the greater wing-coverts hide only half or less than half of the secondary quills, instead of reaching much beyond their middle, or nearly to the end. (See Sundevall, Ornith. Syst.)

The precise character of scutellation of tarsus is somewhat difficult to make out, owing to a tendency to fusion of the plates, although not essentially different from most *Oscines*. There is a series of scutellæ along the anterior face of the tarsus, and a longitudinal plate on each side, meeting, but not coalescing, behind. The anterior scutellæ sometimes appear to fuse into the outer lateral plate; or sometimes the latter is more or less subdivided; the inner plate is generally more distinct from the anterior scutellæ, and usually entire, except perhaps at the lower extremity.

Genera of North American Hirundinidæ.

A. Nostrils broadly oval, or circular; opening upwards and forward, and exposed; without overhanging membrane.

a. Edge of wing smooth. Tarsus short, stout; equal to middle toe without claw; feathered on the inner side above. Nostrils almost or entirely without membrane.

Bill stout; culmen and commissure much curved. Frontal feathers without bristles. Tail deeply forked. Color lustrous-black; belly and crissum sometimes white *Progne.*

Bill rather weaker; commissure and culmen nearly straight to near tip.

Frontal feathers bristly. Tail nearly even. Throat, rump, and crissum,

and usually forehead, rufous; belly white *Petrochelidon*.

b. Edge of wing smooth. Tarsus longer than in last; equal to middle toe and half the claw. Nostrils bordered along posterior half by membrane, but not overhung internally. Bill very small. Tail forked. Crissum dusky except in *Neochelidon fucata*. Various genera and subgenera, none North American, as *Atticora*, *Notiochelidon*, *Neochelidon*, and *Pygochelidon*.

c. Edge of wing armed with stiff recurved hooks. Tarsus as in preceding (tarsus and toes much as in *Pygochelidon*). Bill larger and more depressed.

Tail emarginate only. Crissum white *Stelgidopteryx*.

B. Nostrils lateral; bordered behind and inside, or overhung by membrane, the outer edge of which is straight, and directed either parallel with axis of bill or diverging from it.

a. Tarsus short; about equal to middle toe without claw. Tibial joint feathered; feathers extending along inside of upper end of tarsus.

Tarsus bare at lower end. Lateral claws reaching only to base of middle.

Tail very deeply forked, much longer than closed wings; lateral feathers linear and very narrow at end, twice the length of central.

Upper parts and pectoral collar steel-blue; front and throat, sometimes under parts, rufous. Tail-feathers with large spots . . . *Hirundo*.

Tail with shallow fork, not exceeding half an inch, shorter than closed wings. Feathers broad. Color blue or green above, with or without white rump; white beneath. Tail-feathers without spots *Tachycineta*.

Tarsus with a tuft of feathers at lower end. Lateral claws lengthened, reaching beyond base of middle claw.

Tail slightly forked. Color dull-brown above; beneath white,

with brown pectoral collar *Cotyle*.

b. Tarsus long; equal to middle toe and half claw; entirely bare. Tail considerably forked, about equal to closed wing. Color green above; white beneath *Callichelidon*.¹

GENUS **PROGNE**, BOIE.

Progne, BOIE, Isis, 1826, 971. (Type, *Hirundo purpurea* vel *subis*, L.) — BAIRD, Birds N. Am. 1858, 314.

GEN. CHAR. Body stout. Bill robust, lengthened; lower or commissural edge of maxilla sinuated, decidedly convex for basal half, then as concave to the tip, the lower mandible falling within its chord. Nostrils superior, broadly open, and nearly circular, without any adjacent membrane, the edges rounded. Legs stout. Tarsus equal to middle toe without claw; the joint feathered; lateral toes about equal; the basal joint of the middle toe half free internally, rather less so externally. Claws strong, much curved. Nest in hollow trees. Eggs white.

The species of this genus are the most powerful and robust of the Swallows. Some are entirely glossy-black, others whitish below. The following

¹ *Hirundo (Callichelidon) cyaneoviridis* (BRYANT), BAIRD, Rev. Am. Birds, 1865, 303. Bahamas. This species may yet be detected on the Florida coast.

diagnosis will show the relationship of the several forms usually recognized as distinct species :—

Species and Varieties.

P. subis. Above lustrous blue-black; beneath lustrous blue-black or brownish-gray, uniform, or with the abdomen and crissum white, or whitish. Females always with the throat and jugulum gray.

A. Adult males entirely steel-blue.

a. Females and young males with the abdomen pure white.

Feathers about the anus smoky-gray beneath the surface.

Wing about 6.00; fork of tail, .80 deep. ♀ and *Juv.* Abdominal and crissal feathers always with dusky shafts, and with the concealed portion grayish. Forehead and nape hoary grayish. *Hab.* Continental North America, south into Northern Mexico var. *subis*.

Wing, 5.25; fork of tail considerably less. ♀ and *Juv.* unknown.

Hab. Galapagos var. *concolor*.¹

Wing, 5.80; fork of tail, 1.10 deep. ♀ and *Juv.* unknown. *Hab.*

Chili var. *furcata*.²

Feathers about the anus snowy-white beneath the surface.

Wing, 5.50; fork of tail, .90 deep. ♀ and *juv.* Abdominal and crissal feathers entirely snowy-white, — never with dusky shafts (except ♂ *juv.* in transition). Forehead dusky grayish-brown; nape steel-blue. *Hab.* Cuba and Florida Keys var. *cryptoleuca*.

b. Females and young with the abdomen dusky grayish-brown.

Wing, 5.50; fork of tail, .80. ♀. Lower parts dusky grayish-brown, the feathers bordered with lighter grayish, producing a squamate appearance. *Juv.* similar, but feathers of the upper parts bordered with whitish. *Hab.* Paraguay (Vermejo River) var. *elegans*.³

B. Adult males with the abdomen and crissum pure white.

a. Lower tail-coverts with the shafts pure white. ♂ (adult) with the throat, jugulum, and sides steel-blue.

♀ and *juv.* scarcely distinguishable from those of *cryptoleuca*. *Hab.*

Porto Rico and Jamaica (St. Domingo also?) var. *dominicensis*.⁴

b. Lower tail-coverts with their shafts dusky. ♂ (adult) with throat, jugulum, and sides brownish-gray.

Sides of the jugulum with a blue-black patch in the ♂. Wing, 5.50; fork of tail, .70 deep. *Hab.* Bolivia var. *domestica*.⁵

¹ *Progne subis*, var. *concolor*. *Hirundo concolor*, GOULD, P. Z. S. 1837, 22 (James L., Galapagos). *Progne c.* BAIRD, Rev. Am. B. 1865, 278. *Progne modesta*, GOULD, Birds Beagle, 39, pl. v. (Same specimen.)

² *Progne subis*, var. *furcata*. *Progne furcata*, BAIRD, Rev. Am. B. 1865, 278. (Chile.)

³ *Progne subis*, var. *elegans*. *Progne elegans*, BAIRD, Rev. Am. B. 1865, 275. (Vermejo River. 1 *Progne purpurea*, DARWIN, B. Beagle 38 (Montevideo, November), Bahia Blanca, Buenos Ayres, September.)

⁴ *Progne (subis var.) dominicensis*. *Hirundo dominicensis*, GM. S. N. 1, 1788, 1025. *Progne d. MARCH*, P. A. N. S. 1863, 295; BAIRD, Rev. Am. B. 1865, 279.

⁵ *Progne (subis var.) domestica*. *Progne domestica* (VIEILL.) BAIRD, Rev. Am. B. 1865, 282. (Paraguay and Bolivia.) (*Hirundo domestica*, VIEILL. Nouv. Dict. xiv, 1817, 521.)

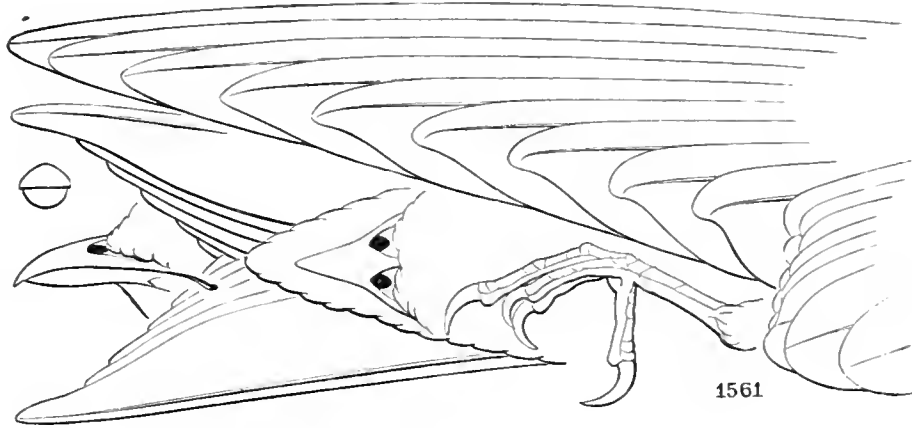
Sides of the jugulum without a blue-black patch in the ♂. Wing, 5.20 ; fork of tail, .55 deep. *Hab.* Middle America, from Southern Mexico to New Granada var. *leucogaster*.⁶

Progne subis, BAIRD.

PURPLE MARTIN.

Hirundo subis, LINN. S. N. 10th ed. 1758, 192 (*Hirundo cærulea canadensis*, EDWARDS, Av. tab. 120, Hudson's Bay). *Progne subis*, BAIRD, Rev. Am. Birds, 1864, 274. *H. purpurea*, LINN. S. N. 12th ed. 1766, 344 (*H. purpurea*, CATESBY, Car. tab. 51). — AUD. Orn. Biog. I, pl. xxiii. — IB. Birds Am. I, pl. xlv. — YARRELL, Br. Birds, II, 232, 274 (England and Ireland, Sept. 1842). — JONES, Nat. Bermuda, 34 (Sept. 22, 1849). *Progne purpurea*, BOIE, Isis, 1826, 971. — BREWER, N. Am. Ool. I, 1857, 103, pl. iv, fig. 47 (eggs). — BAIRD, Birds N. Am. 1858, 314. — COOPER & SUCKLEY, P. R. R. Rep. XII, 2, 186 (Fort Steilacoom). — BLAKISTON, Ibis, 1863, 65 (Saskatchewan) — COOPER, Orn. Cal. I, 1870, 113. — SAMUELS, 260. *Hirundo violacea*, GM. *H. cærulea*, VIEILL. *H. versicolor*, VIEILL. *H. ludoviciana*, CUV.

SP. CHAR. (No. 1,561 ♂.) Entirely lustrous steel-blue, with a purplish gloss; the tail-feathers and the wings, except the lesser and middle coverts, and edge inside, dull black,



Progne subis.

scarcely glossed. Tibiæ dark brownish. A concealed patch of white on the sides under the wings. Concealed central portion of anal feathers light whitish-gray.

(No. 1,129 ♀.) Above somewhat similar, but much duller. Beneath smoky brownish-gray, without lustre, paler behind, and becoming sometimes quite whitish on belly and

⁶ *Progne*, (*subis* var ?) *leucogaster*. *Progne leucogaster*, BAIRD, Rev. Am. B. 1865, 280. (Southern Mexico to Carthagenæ.) *Progne dominicensis* and *P. chalybea*, ARCH. (nee GMEL.).

From a careful examination of specimens of the above forms, the opinion that they are all local differentiations of one primitive type at once presents itself. The differences from the typical *subis* are not great, except in the white-bellied group (*dominicensis* and its allies), while an approach to the white belly of these is plainly to be seen in *P. cryptoleuca*; again, some specimens of *dominicensis* have the crissum mixed with blackish, while others have it wholly snowy-white. While the male of *cryptoleuca* is scarcely distinguishable, at first sight, from that of *subis*, the female is entirely different, but, on the other hand, scarcely to be distinguished from that of *dominicensis* and *leucogaster*. Adult males of the latter species are much like adult females of *dominicensis*, while Floridan (resident) specimens of *subis* approach very decidedly to the rather unique characters of *elegans*. It is therefore extremely probable that all are merely local modifications of one species.

crissum, but all the feathers always with dusky shafts, and more or less clouded with gray centrally, even though fading into whitish to the edges. This is particularly appreciable in the longer crissal feathers. The edges of the dark feathers of throat and jugulum are usually paler, imparting somewhat of a lunulated appearance, their centres sometimes considerably darker, causing an appearance of obsolete spots. There is a tendency to a grayish collar on sides of neck, and generally traceable to the nape; this, in one specimen (5,492) from California, being hoary gray, the forehead similar.

The young male of the second year is similar to the female, with the steel-blue appearing in patches.

Total length (of 1,561), 7.50; wing, 6.00; tail, 3.40; difference between inner and outer feather, .75; difference between first and ninth quills, 2.88; length of bill from forehead, .55; from nostril, .34; along gape, .94; width of gape, .74; tarsus, .61; middle toe and claw, .80; claw alone, .25; hind toe and claw, .54; claw alone, .27.

HAB. The whole of the United States and the Provinces; Saskatchewan; Cape St. Lucas and Northern Mexico (winter); Orizaba (SEMICHRAST); Bermuda. Accidental in England. South American and West Indian birds apparently belong to other races.

Many Western adult males are considerably less violaceous than any Eastern one; but there is so much variation in this respect among specimens from one locality, that this difference in lustre does not seem of much importance.

An adult female (No. 61,361, G. A. Boardman) from Lake Harney, Florida, is so unlike all other specimens in the collection as to almost warrant our considering it as representing a distinct local race. It differs from females and young males of all the other races (except *deyans*, from which it differs in other striking particulars) in the following respects: Above, the lustrous steel-blue is uninterrupted, the forehead and nape being uniform with the other portions; beneath, dark smoky-gray, inclining to whitish on the middle of the abdomen; the jugulum and crissum have a faint gloss of steel-blue,



Progne subis

the feathers of the latter bordered with grayish-white. The chief difference from *deyans* is in lacking the conspicuous grayish-white border to the feathers of the whole lower part, the surface being uniform instead of conspicuously squamated. Wing, 5.60; tail, 3.00; fork of tail, .80 deep.

HABITS. The Purple Martin is emphatically a bird common to the whole of North America. It breeds from Florida to high northern latitudes, and from the Atlantic to the Pacific. It is very abundant in Florida, as it is in various other parts of the country

farther north, and the large flocks of migrating birds of this species which pass through Eastern Massachusetts the last of September attest its equal abundance north of the latter State. It occurs in Bermuda, is resident in the

alpine regions of Mexico, and is also found at Cape St. Lucas. Accidental specimens have been detected in England and in Ireland. It is abundant on the Saskatchewan. Burmeister states that this species is common in the vicinity of Rio de Janeiro, and that it is distributed in moderate abundance through the whole of tropical South America. Von Pelzeln also cites it as occurring on the Rio Negro and at Manaqueri through the three winter months, nesting in old buildings and in holes in the rocks. It is, however, quite possible that they refer to an allied but distinct species.

In a wild state the natural resort of this species, for nesting and shelter, was to hollow trees and crevasses in rocks. The introduction of civilized life, and with it of other safer and more convenient places, better adapted to their wants, has wrought an entire change in its habits. It is now very rarely known to resort to a hollow tree, though it will do so where better provision is not to be had. Comfortable and convenient boxes, of various devices, in our cities and large towns, attract them to build in small communities around the dwellings of man, where their social, familiar, and confiding disposition make them general favorites. There they find abundance of insect food, and repay their benefactors by the destruction of numerous injurious and noxious kinds, and there, too, they are also comparatively safe from their own enemies. These conveniences vary from the elegant martin-houses that adorn private grounds in our Eastern cities to the ruder gourds and calabashes which are said to be frequently placed near the humbler cabins of the Southern negroes. In Washington the columns of the public buildings, and the eaves and sheltered portions of the piazzas, afford a convenient protection to large numbers around the Patent Office and the Post-Office buildings.

The abundance of this species varies in different parts of the country, from causes not always apparent. In the vicinity of Boston it is quite unusual, though said to have been, forty years since, quite common. There their places are taken by the *H. bicolor*, who occupy almost exclusively the martin-houses, and very rarely build in hollow trees.

Sir John Richardson states that it arrives within the Arctic Circle earlier than any other of its family. It made its first appearance at Great Bear Lake as early as the 17th of May, when the ground was covered with snow, and the rivers and lakes were all icebound.

In the Southern States it is said to raise three broods in a season; in its more northern distribution it raises but one. Their early migrations expose the Martins to severe exposure and suffering from changes of weather, in which large numbers have been known to perish. An occurrence of this kind is said to have taken place in Eastern Massachusetts, where nearly all the birds of this species were destroyed, and where to this day their places have never been supplied.

Within its selected compartment the Martin prepares a loose and irregular nest. This is composed of various materials, such as fine dry leaves, straws,

stems of grasses, fine twigs, bits of string, rags, etc. These are carelessly thrown together, and the whole is usually warmly lined with feathers or other soft materials. This nest is occupied year after year by the same pair, but with each new brood the nest is thoroughly repaired, and often increased in size by the accumulation of new materials.

The Martins do not winter in the United States, but enter the extreme Southern portions early in February. Audubon states that they arrive often in prodigious flocks. On the Ohio their advent is about the 15th of March, and in Missouri, Ohio, and Pennsylvania about the 10th of April. About Boston their appearance is from the 25th of April to the middle of May. Mr. Audubon states that they all return to the Southern States about the 20th of August, but this is hardly correct. Their departure varies very much with the season. In the fall of 1870 they were to be found in large flocks, slowly moving southward, but often remaining several days at a time at the same place, and then proceeding to their next halt. Their favorite places for such stops are usually a high and uninhabited hillside near the sea.

The Martin is a bold and courageous bird, prompt to meet and repel dangers, especially when threatened by winged enemies, never hesitating to attack and drive them away from its neighborhood. It is therefore a valuable protection to the barnyard. Its food is the larger kinds of insects, especially beetles, in destroying which it again does good service to the husbandman. The song of the Martin is a succession of twitters, which, without being musical, are far from being unpleasant; they begin with the earliest dawn, and during the earlier periods of incubation are almost incessantly repeated. The eggs of the Purple Martin measure .94 of an inch in length by .79 in breadth. They are of an oblong-oval shape, are pointed at one end, are of a uniform creamy-white, and are never spotted. They are quite uniform in size and shape. Eggs from Florida are proportionally smaller than those from the Northern States.

Progne subis, var. *cryptoleuca*, BAIRD.

CUBAN MARTIN.

Progne cryptoleuca, BAIRD, Rev. Am. Birds, 1864, 277. *Hirundo purpurea*, D'ORB. Sagra's Cuba, Ois. 1849, 94 (excl. syn.). *Progne purpurea*, CAB. Jour. 1856, 3. — GUNDLACH, Cab. Jour. 1861.

SP. CHAR. (No. 34,242, ♂). Color much as in *P. subis*, — rich steel-blue, with purple or violet gloss; the wings and tail, however, much more decidedly glossed, and with a shade of greenish. The feathers around the anus and in the anterior portion of crissum with dark bluish down at base, pure snowy-white in the middle, and then blackish, passing into the usual steel-blue. The white is entirely concealed, and its amount and purity diminish as the feathers are more and more distant, until it fades into the usual gray median portion of the feather. The usual concealed white patch on the sides under the wings. Total length, 7.60; wing, 5.50; tail, 3.40; perpendicular depth of fork, .86; dif-

ference between first and ninth primary, 2.75; length of bill from forehead, .55; from nostril, .34; along gape, .86; width, .58; tarsus, .53; middle toe and claw, .79; claw alone, .24; hind toe and claw, .52; claw alone, .25.

Female (17,730, Monte Verde, Cuba, May 2; C. Wright). Above steel-blue, less glossy than in the male, and becoming lustreless dark smoky-brown on the forehead. Head, laterally and beneath, with jugulum and sides, uniform brownish-gray (without darker shafts or lighter borders to feathers, as in *subis*); whole abdomen, anal region, and crissum snowy-white, including the shafts. Wing, 5.40; tail, 2.80; fork of tail, .70 deep.

Young male (10,368, Cape Florida, May 18, 1858; G. Wurdemann). Similar to the female, but the steel-blue above more brilliant and continuous, the forehead and wings being nearly as lustrous as the back; throat and jugulum mixed with steel-blue feathers, and crissum with some feathers of steel-blue bordered with whitish. Wing, 5.40; tail, 2.90; fork of tail, .80 deep.

HAB. Cuba, and Florida Keys? (Perhaps Bahamas.)

This species has a close external resemblance to *P. subis*, for which it has usually been mistaken. It is of nearly the same size, but the feet are proportionately smaller and weaker; while the wings are shorter, the tail is as long and more deeply forked; the feathers considerably narrower, and more attenuated (the outer .40 wide, instead of .46). The colors above are more brilliant, and extend more over the greater wing-coverts and lining of wings, while the quills and tail-feathers have a richer gloss of purplish, changing to greenish. An apparently good diagnostic feature is the concealed pure white of the feathers about the anal regions, replaced in *subis* by grayish, rarely approximating to whitish.

A *Progne* collected by Mr. Wright, at Monte Verde, is duller in color than that from Remedios, but has still more concealed white below, in the median portion, not only of the anal feathers, but of those of the entire crissum and of the belly. A female bird, which I presume to be the same species, can scarcely be distinguished from the female of *dominicensis*, except in the brownish shafts of the longer crissal feathers, and an almost imperceptible tinge of brownish in the webs of the same feathers. It is almost exactly like the *P. leucogaster* of Mexico and Central America.

This species is included in the North American fauna in consequence of the capture of a specimen (No. 10,368 ♂ *jur.*, May 18, 1858) at Cape Florida, which is with scarcely a doubt referable to it. This specimen is a young male in its second year, so that it is difficult to ascertain positively its relationship to the two allied species; but as it agrees perfectly in its proportions with *cryptoleuca*, and its plumage differs from the corresponding one of *subis* in essential respects, we have little hesitation in referring it to the former.

Nothing distinctive is recorded as to the habits of this bird.

GENUS **PETROCHELIDON**, CABANIS.

Petrochelidon, CAR. MUS. HEIN. 1850, 1851, 47. (Type, *Hirundo melanogaster*, SWAINS. = *P. swainsoni*, SCL.)

GEN. CHAR. Bill stout and deep, somewhat as in *Progne*. Nostrils entirely superior,



Petrochelidon lunifrons

open, without overhanging membrane on the inner (or upper) side, but somewhat overhung by short bristles, seen also along base of inner mandible and in chin. Legs stout; the tarsi short, not exceeding the middle toe exclusive of its claw; feathered all round for basal third or fourth, though no feathers are inserted on the posterior face. Tail

falling short of the closed wings, nearly square or slightly emarginate; the lateral feathers broad to near the ends, and not attenuated.

Of this genus as restricted we have but one species in North America, although several others occur in the West Indies and the southern parts of the continent. All have the back steel-blue, with concealed streaks of white; the rump, crissum, and a narrow nuchal band, and usually the forehead, chestnut.

Petrochelidon lunifrons, BAIRD.

CLIFF SWALLOW; EAVE SWALLOW.

Hirundo lunifrons, SAY, Long's Exp. II, 1823, 47 (Rocky Mts.). — CASSIN; BREWER, N. A. Ool. I, 1857, 94, pl. v, no. 68-73 (eggs). — BAIRD, Birds N. Am. 1858, 309. — LAWRENCE, ANN. N. Y. LYC. 1861, 317 (Panama R. R.; winter). — VERRILL, PR. BOST. N. H. SOC. 1864, 276 (migration and history). — LORD, PR. R. A. INST. WOOLWICH, IV, 1864, 16 (Br. Col.; nesting). — COOPER & SUCKLEY, P. R. R. XII, II, 184 (Wash. Terr.). — DALL & BANNISTER, 279 (Alaska). — COOPER, ORN. CAL. I, 1870, 104. — SAMUELS, 256. *Petrochelidon* I. BAIRD, REVIEW, 1864, 288. *H. opifex*, CLINTON, 1824. *H. republicana*, AUD. 1824. *H. fulva*, BON. (not of VIEILLIOT). — AUD. ORN. BIOG. I, pl. lviii. — IN. Birds Am. I, pl. xlvii. — MAXIM, CAL. JOUR. VI, 1858, 100.

SP. CHAR. (No. 18,322 ♂.) Top of head glossy black, with greenish lustre; back and scapulars similar, but rather duller, and somewhat streaked by the appearance of the white sides of the feathers, — the bases of the feathers, however, being plumbeous. Chin, throat, and sides of head, chestnut-brown, this extending round on the nape as a distinct continuous collar, which is bounded posteriorly by dull grayish. The chestnut darkest on the chin, with a rich purplish tinge. Rump above and on sides paler chestnut (sometimes fading into whitish). Upper tail-coverts grayish-brown, edged with paler, lighter than the plain brown of the wings and tail. Forehead, for the length of the bill, creamy-white, somewhat lunate, or extending in an acute angle, a little over the eye; a very narrow blackish frontlet; loreal region dusky to the bill. A patch of glossy black in the lower part

of the breast, and a few black feathers in the extreme chin, the latter sometimes scarcely appreciable. Under parts dull white, tinged with reddish-gray on the sides and inside of the wings. Feathers of crissum brownish-gray, edged with whitish, with a tinge of rufous anteriorly (sometimes almost inappreciable). Nest of mud, lined; built against rocks or beams; opening sometimes circular, on the side; sometimes open above; eggs spotted.

Total length, 5.10; wing, 4.50; tail, 2.40, nearly even; difference of primary quills, 2.10; length of bill from forehead, .38, from nostril, .25, along gape, .60, width, .50; tarsus, .48; middle toe and claw, .72; claw alone, .22; hind toe and claw, .44; claw alone, .20.

HAB. Entire United States from Atlantic to Pacific, and along central region to Arctic Ocean and Fort Yukon; Panama in winter. Not noted at Cape St. Lucas, in Mexico, or in West Indies.

There is no difference between the sexes, but the young bird is very different from the adult in the following particulars: the steel-blue above is replaced by a lustreless dusky-brown, the feathers (except on head) being margined with a creamy tint; the neck merely tinged with rufous; the throat has only a dusky suffusion, and the chin is much mixed with white; the frontal patch is obsolete.

A closely allied species from Mexico, *P. swainsoni* (see Baird, Rev. Am. Birds, 1865, 290), possibly yet to be found near our southern border, differs as follows:—

Frontlet reddish-white, with narrow band of black along upper mandible . . . *lunifrons*.
Frontlet chestnut-brown, without black at base of upper mandible. Size smaller.

swainsoni.

Sometimes (as in 11,027 ♀ and 11,025 ♂, Fort Bridger) the black patch extends upward, somewhat broken, however, to the bill.

HABITS. The early history of the Cliff Swallow must always remain involved in some obscurity, so far as concerns its numbers and distribution before the first settlement of the country, and even down to the early portion of the present century. Its existence was unknown to Mr. Wilson, and it was unknown to other naturalists until obtained by Say, in Long's expedition to the Rocky Mountains in 1820. It is now known to occur nearly throughout North America, and to breed from Pennsylvania to the Arctic regions, and from the Atlantic to the Pacific. Yet to many parts of the country it is a new-comer, where, a few years since, it was entirely unknown. It seems to be probable that at first this species was to be found only in certain localities that offered favorable places whereon to construct their nests. Where high limestone cliffs abound, these birds may have always occurred, although escaping observation.

In the same year that Long discovered this species among the Rocky Mountains (1820), Sir John Franklin's party also met with it between the Cumberland House and Fort Enterprise, and on the banks of Point Lake, in latitude 65°. In June, 1825, a number of these birds made their first appearance at Fort Chippewyan, and built their nests under the eaves of the house. This fort had then existed many years, and trading-posts had been in existence a century and a half, and yet this was the first instance of its

placing itself under the protection of man throughout that wide extent of territory. Mr. Audubon met with this species at Henderson, on the Ohio, in 1815. Two years later he found a colony breeding in Newport, Ky., which dated back to the same year. Several other colonies in that neighborhood also first appeared in the same year. In 1837 I received their eggs from Coventry, Vt., at which time they were a new species to me. They were there known as the "Eave Swallow," and the time of their first appearance could not be determined. I first met with them in 1839, at Jaffrey, N. H., where they had made their first appearance the year before, and were not then known to be anywhere else in that vicinity. The same year I afterwards found them in Burlington, Vt., where they had been known only for three years. When or where they first appeared in Massachusetts is not known. I first observed a large colony of them in Attleborough in 1842. Its size indicated the existence of these birds in that place for several years. The same year they also appeared, apparently for the first time, in Boston, Hingham, and in other places in the neighborhood.

In 1824, De Witt Clinton read a paper to the New York Lyceum, stating that he had met with these birds at Whitehall, N. Y., at the southern end of Lake Champlain, in 1817, about the time of their first appearance on the Ohio; and Rev. Zadock Thompson met with them in Randolph, Vt., at about the same period. General Dearborn noticed them for the first time in Winthrop, Me., in 1830. They first appeared at Carlisle, Penn., in 1841.

Professor Verrill discovered, in 1861, a large colony of these birds breeding on the high limestone cliffs of Anticosti, apparently in their original condition, and entirely removed from the influences of man. This suggested an inquiry as to their early presence in Northeastern America. From the information he received, he was led to conclude that this Swallow was known to certain parts of Maine earlier than its first discovery anywhere in the West. Whether these birds were indigenous to the West or not cannot now be determined. That they were discovered there only so recently as 1820 proves nothing. We only know that in certain localities — such as Rock River on the Mississippi, and at Anticosti on the St. Lawrence — their occurrence in large numbers in their former normal condition of independence suggests in either locality an equally remote beginning. It is possible, and even probable, that in favorable localities in various parts of the country they existed in isolated colonies. The settlement of the country, and the multiplication of convenient, sheltered, and safe places for their nests, gradually wrought a change in their habits, and greatly multiplied their numbers. At St. Stephen, N. B., and in that neighborhood, Mr. Boardman found this species as abundant in 1828 as they have been at any time since. They were then very plentiful under the eaves of several old barns in that part of the country. Yet twelve years afterward they were entirely unknown on the lower Kennebeck.

Dr. Cooper found this to be an abundant species in California, on the

coast, where they breed on the cliffs, and have all the appearance of being indigenous. They appear at San Diego as early as March 15, a week before the Barn Swallow, and do not leave until October. They build even in the noisy streets of San Francisco. Dr. Cooper observed them catching young grasshoppers, which is certainly unusual food for Swallows, and one that has proved fatal to young Barn Swallows when fed to the latter in confinement. At Santa Cruz they bred as early as April 12, and had second broods July 5.

The nests of this Swallow, when built on the side of a cliff or in any exposed position, are constructed in the shape of a retort, the larger portion adhering to the wall, arched over at the top and projecting in front, with a covered passage-way opening at the bottom. The normal original nest, in a state of nature, is an elaborate and remarkably ingenious structure, sheltering its inmates from the weather and from their many enemies. Since they have sought the shelter of man and built under the eaves of barns and houses, the old style of their nests has been greatly changed, and the retort-like shape has nearly disappeared.

In building and in repairing their nests they work with great industry, and often complete their task with wonderful celerity. Where they exist in a large colony, it is not an uncommon thing to see several birds at work upon the same nest, — one bird, apparently the female owner, always assisting and directing the whole. After the work of construction has gone so far as to permit the occupation of the nest, it is often to be observed that the task of completing and improving the structure is kept up by the male. In a large colony of these Swallows, whose nests were built under the projecting roof of a barn in a small island in the Bay of Fundy, every nest was as open as are those of the Barn Swallow. These birds had been encouraged to build by the owner, and boards had been placed above and below their nests, of which they at once took advantage to build an unusual nest. These nests are made of various kinds of adhesive earth and mud. They are neatly and warmly lined with fine dry grasses and leaves, intermingled with feathers, wool, and other soft, warm substances. It has been thought that the mud of which these nests are composed is agglutinated by the saliva of the birds; but of this I have never been able to detect any evidence in the nests themselves, the crumbling nature of which when dry is against this supposition; and the birds themselves are often to be seen about puddles of water, apparently gathering materials.

When the nests of a large colony are invaded, the birds manifest great uneasiness, collecting in a swarm over the head of the intruder, wheeling around in circles, uttering loud outcries, and even flying close to his head, as if to attack him, with loud snapping of the bills.

The song of this Swallow is an unmusical creak, rather than a twitter, frequent rather than loud, and occasionally harsh, yet so earnest and genial in its expression that its effect is far from being unpleasant.

The ground-color of their eggs is white, and they are marked with dots,

blotches, and points of reddish-brown. These markings vary greatly in size, number, and distribution. They are usually chiefly about the larger end. In shape they are usually less elongated than those of the Barn Swallow, and their markings are larger. This is not, however, invariable, and the two kinds are not always distinguishable. In length they vary from .875 of an inch to .75, and their average breadth is .60.

GENUS *HIRUNDO*, LINN.

Hirundo, LINN. Syst. Nat. I, 10th ed. 1758, 191. (Type, *H. rustica*, LINN.)

Under the generic head of *Hirundo* I propose to combine several groups



Hirundo horreorum.

of American Swallows agreeing in moderate, depressed bill, with straight commissure, and lateral nostrils overhung by membrane; the tarsi feathered only at the upper end, or else entirely bare; the lateral claws moderate, not extending beyond the base

of the median; the edge of the outer primary without hooks; the tail variable in character, from a very deep fork to a slight emargination only.

Subgenera.

Tarsi slightly feathered on inner face at upper end; equal in length to middle toe without claw.

Tail very deeply forked *Hirundo*.

Tail slightly forked or emarginate *Tachycineta*.

Tarsi entirely naked; lengthened equal to middle toe and half its claw.

Tail considerably forked *Callichelidon*¹

SUBGENUS *HIRUNDO*, LINN.

GEN. CHAR. Nostrils lateral. Tarsi short, not exceeding middle toe without its claw; the upper joint covered with feathers, which extend a short distance along the inner face of tarsus. Tail very deeply forked; the lateral feather much attenuated, twice as long as the middle. Basal joint of middle toe free for terminal fourth on outside, for half on inside. Nest partly of mud, and lined with feathers; eggs spotted.

In type, and in American species, the forehead and throat rufous; a black pectoral collar; tail-feathers with large light spots on inner webs.

¹ *C. caferoides*, BRYANT & BAIRD, Rev. 303 (Bahamas).

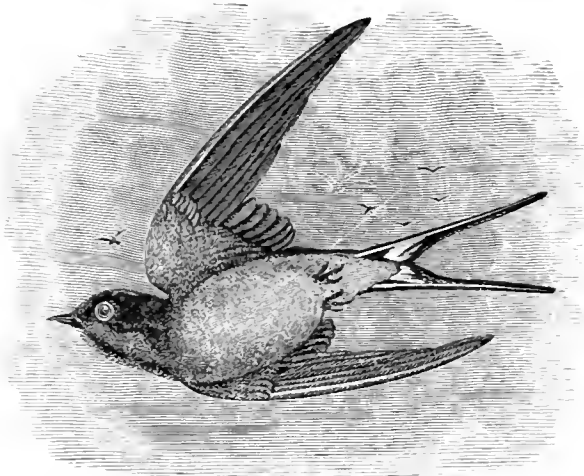
But one species, so far as known, of this subgenus as restricted, belongs to America. There are, however, quite a number known in the Old World.

Hirundo horreorum, BARTON.

BARN SWALLOW.

Hirundo horreorum, BARTON, Fragments N. H. Penna. 1799, 17. — BAIRD, Birds N. Am. 1858, 308; Rev. 294. — A. & E. NEWTON, Ibis, 1859, 66 (Sta. Cruz; transient). — SCLATER & SALVIN, Ibis, 1859, 13 (Guatemala). — SCLATER, P. Z. S. 1864, 173 (City of Mex.) — LAWRENCE, Ann. N. Y. Lyc. 1861, 316 (Panama). — COOPER & SUCKLEY, P. R. R. Rep. XII, 11, 184 (south of Columbia River). — DALL & BANNISTER, 279 (Alaska). — COOPER, Orn. Cal. I, 1870, 103. — SAMUELS, 254. *Hirundo rufa*, VIEILL. — CASSIN, Ill. — BREWER, N. Am. Ool. I, 1857, 91, pl. v, fig. 63–67 (eggs). — CAB. Jour. IV, 1856, 3 (Cuba; spring and autumn). — REINHARDT, Ibis, 1861, 5 (Greenland; two specimens). — GUNDLACH, Cab. Jour. 1861, 328 (Cuba; common). *Hirundo americana*, WILSON; RICH; LAMBEYE, Aves de Cuba, 1850, 44, lam. vii, fig. 2. *Hirundo rustica*, AUD. Orn. Biog. II, pl. clxxiii. — LB. Birds Am. I, pl. xlviii. — JONES, Nat. Hist. Bermuda, 34 (Bermudas; Aug. and Sept.).

SP. CHAR. Tail very deeply forked; outer feathers several inches longer than the inner, very narrow towards the end. Above glossy blue, with concealed white in the middle of the back. Throat chestnut; rest of lower part reddish-white, not conspicuously different. A steel-blue collar on the upper part of the breast, interrupted in the middle. Tail-feathers with a white spot near the middle, on the inner web. Female with the outer tail-feather not quite so long. Length, 6.90 inches; wing, 5.00; tail, 4.50.



Hirundo horreorum.

HAB. Whole of the United States; north to Fort Rac, Slave Lake; Greenland; south in winter to Central America and West Indies; Panama (LAWR.); Plateau of Mexico (breeds, SUMICHRAST); Veragua, Chiriqui (SALVIN). Not found at Cape St. Lucas. South America?

In young birds, the frontal chestnut band is smaller and less distinct.

It is still a question whether a South American resident species (*H. erythrogaster*) is identical or not. The only two specimens of the latter (21,007 and 21,008, Vermejo, Feb., 1860; C. Wood) have a very much less violaceous upper plumage than North American examples, the blue above having even a greenish tinge. They are moulting, unfortunately, so that they cannot be satisfactorily compared; except in the respect pointed out, however, they appear to be identical with North American examples.

The European *H. rustica* is perfectly distinct, though closely allied. It differs essentially from the American *H. horreorum* in much longer outer

tail-feathers, and in having a very broad, continuous collar of steel-blue across the jugulum, entirely isolating the chestnut of the throat; the abdomen appears to be much more whitish than in the American species.

Many specimens of *H. horreorum* show a continuous collar, but then the two lateral crescents are but just barely connected. In No. 2,191 ♀, Carlisle, Penn., May, there is an indication of as broad a collar as in the European species; but the area, though sharply bounded, is not uniformly black, being much mixed centrally with light rufous.

Specimens of *H. horreorum* from both coasts of North America appear to be perfectly identical.

HABITS. No one of all our North American birds is more widely diffused, more generally abundant, wherever found, or better known, than the graceful and familiar Barn Swallow. And no one is more universally or more deservedly a favorite. Found throughout North America from Florida to Greenland and from ocean to ocean, and breeding nearly throughout the same wide extent, its distribution is universal. Venturing with a confiding trust into our crowded cities, and building their elaborate nests in the porches of the dwellings, as well as entering in greater numbers the barns and farm-buildings of the agriculturists and placing themselves under the protection of man, they rarely fail to win for themselves the interest and good-will they so well deserve. Innocent and blameless in their lives, there is no evil blended with the many benefits they confer on man. They are his ever-constant benefactor and friend, and are never known, even indirectly, to do him any injury. For their daily food, and for that of their offspring, they destroy the insects that annoy his cattle, injure his fruit-trees, sting his fruit, or molest his person. Social, affectionate, and kind in their intercourse with each other; faithful and devoted in the discharge of their conjugal and parental duties; exemplary, watchful, and tender alike to their own family and to all their race; sympathizing and benevolent when their fellows are in any trouble, — these lovely and beautiful birds are bright examples to all, in their blameless and useful lives.

This Swallow passes the winter months in Central and South America as far south as Brazil and Paraguay, and the West Indies, and is found throughout the year in the Plateau of Mexico. It appears in the Southern States in March, and in the Central States early in April. In the latter part of this month it reaches New York and New England, becoming abundant near Boston about the first of May. Sir John Richardson found them breeding as far north as latitude 67° 30'. They reached Fort Chippewyan, latitude 57, as early as the 15th of May, taking possession of their nests. It has been found throughout Canada and in all the British Provinces, has been met with in New Mexico, and is common in certain portions of Texas and the Indian Territory. Dr. Cooper states it to be less abundant on the Pacific than on the Eastern coast, — a fact attributable to the lack of suitable places in which to build. As settlements have multiplied, these birds have gradu-

ally increased about farms near the coast. In the wild districts they build in the caves that abound in the bluffs along the sea-shore from San Domingo to Columbia River. Dr. Suckley found them also moderately abundant about the basaltic cliffs, near Fort Dalles, Oregon. They are much more abundant about the coast than farther inland.

Mr. Ridgway found this Swallow a very common species in all the rocky localities in the vicinity of water, but not so numerous as the *lunifrons*.

In May it was particularly numerous in the neighborhood of Pyramid Lake, where its nests were built among the "tufa domes," attached to the roofs of the caves. It was seldom that more than one or two pairs were found together.

In July he found a nest that contained young, in a cave among the limestone cliffs of the cañons of the East Humboldt Mountains, at an altitude of about eight thousand feet. Many of their nests were found in May, in the caves of the tufa rocks, on the shores of Pyramid Lake, as well as on the islands in the lake.

Mr. Hepburn writes that he found this Swallow widely diffused along the Pacific coast, as far to the north as Sitka. In California he found it very local, common near the coast, rare inland. Its earliest appearance is March 26, the great bulk leave in August, and the last stragglers are gone before the last of September. They breed in caves and crevices of rocks, and also under the sides of the wooden bridges that span the gullies at San Francisco. Two broods are hatched in a year. The earliest egg was found on the 30th of April, but they are usually a fortnight later. The second laying is about the first of July, and no eggs were found later than the 4th of August. It is at all times quite common to find nests with fresh eggs close to others with half-grown young.

Mr. J. K. Lord publishes an interesting account of a visit made by a solitary pair of Barn Swallows to his party when encamped at Schyakwateen, in British Columbia. A small shanty, loosely built of poles, and tightly roofed, was in constant use as a blacksmith's shop. Early one summer morning late in June, a pair of Swallows perched on the roof of this shed, without exhibiting the slightest fear of the noise made by the bellows or the showers of sparks that flew all around. Presently they entered the house and carefully examined the roof and its supporting poles, twittering to each other all the while in the most excited manner. At length the important question appeared to be settled, and the following day they commenced building on one of the poles immediately over the anvil. Though the hammer was constantly passing close to their structure, these birds kept steadily at their work. In about three days the rough outline of the nest had been constructed. Curious to see from whence they procured their materials, Mr. Lord tracked them to the stream where, on its edge, they worked up the clay and fine sand into a kind of mortar with their beaks. They worked incessantly, and in a few days their nest was finished, the mud walls having

finally been warmly lined with soft dry grasses and the feathers and down of ducks and geese. This trustful pair seemed to know no fear. The narrator often stood on a log to watch them, with his face so near that their feathers frequently brushed against it as they toiled at their work. Soon the nest was completed. Five eggs were laid, which were never left once uncovered until they were hatched, the female sitting the greater part of the time. They were fed with great assiduity by the parents, and grew rapidly. In leaving the nest, two of the young birds fell to the ground, but were picked up by the blacksmith, and placed with the others on their roosting-place. A few days' training taught them the use of their wings, and they soon after took their departure.

Professor Reinhardt records its occurrence in Greenland, at Fiskerøsset and at Nenontalik.

The natural breeding-places of these birds, before the settlement of the country, were caves, overhanging rocky cliffs, and similar localities. Swallow Cave, at Nahant, was once a favorite place of resort, and in the unsettled portions of the country they are only found in such situations. As the country is settled they forsake these places for the buildings of the farm, and their numbers rapidly increase. In the fur countries and in all the Pacific coast, they still breed in and inhabit caves, chiefly among limestone rocks.

Where the opportunity offers, they prefer to place their nests on the horizontal rafters of barns. Built in this situation, the nests have an average height and a breadth of about five inches. The cavity is two inches deep and three inches wide, at the rim. The nests are constructed of distinct layers of mud, from ten to twelve in number, and each separated by strata of fine dry grasses. These layers are each made up of small pellets of mud, that have been worked over by the birds and placed one by one in juxtaposition until each layer is complete. These mud walls are an inch in thickness. When they are completed, they are warmly stuffed with fine soft grasses and lined with downy feathers. When built against the side of a house, a strong foundation of mud is first constructed, upon which the nest is erected. In this case the nest is much more elongate in shape and more strongly made.

A striking peculiarity of these nests is frequently an extra platform, built against, but distinct from the nest itself, designed as a roosting-place for the parents, used by one during incubation at night or when not engaged in procuring food, and by both when the young are large enough to occupy the whole nest. One of these I found to be a separate structure from the nest, but of similar materials, three inches in length and one and a half in breadth. This nest had been for several years occupied by the same pair, though none of their offspring ever returned to the same roof to breed in their turn. Yet in some instances as many as fifty pairs have been known to occupy the rafters of the same barn.

In one instance Mr. Allen has known a pair of these Swallows to take possession of the nest of a pair of Cliff Swallows, placed under the eaves of a barn, driving off the rightful owners. The next year they built a nest in the same place, the old one having fallen down. But such instances are rare, and the attempt is often a failure.

The wonderful activity of this bird, its rapidity and powers of flight, are too striking a peculiarity of this species not to be mentioned. During their stay with us, from May to September, from morn to night they seem to be ever in motion, especially so before incubation, or after their young have flown. The rapidity of their tortuous evolutions, their intricate, involved, and repeated zigzag flights, are altogether indescribable, and must be witnessed to be appreciated. Wilson estimated that these birds fly at the rate of a mile a minute, but any one who has witnessed the ease and celerity with which they seem to delight in overtaking, passing, and repassing a train of cars moving at the rate of thirty miles an hour must realize that this estimate is far from doing full justice to their real speed.

The song of this Swallow, especially when on the wing, is very pleasing and sprightly. It is a succession of twittering notes uttered with great rapidity and animation. When alighted, their notes are delivered more slowly and with much less animation.

The attention of these birds to each other when sitting upon the nest, and to their young when hatched, is unremitting. The estimated numbers of small insects they collect for their own consumption and that of their nestlings is almost incredible. When the young are old enough to leave their nests the manœuvres of the parents to draw them out, and their assistance to them when practising their first short flights, are among the most curious and interesting scenes one can witness in his ornithological experiences; but space would fail me were I to attempt their details.

The number of the young is from four to six, and there are often two broods in a season. As soon as the second brood can fly, or early in September, they all prepare to leave. They usually collect in flocks of from one to several hundred, and depart within a few days of their first assembling. Large flocks pass along the coast of Massachusetts, from the north and east, early in September, often uniting as they meet, and passing rapidly on.

Their eggs have a ground-color of clear white, with a roseate tint when unblown. They are marked with spots of reddish and purplish-brown, varying in size and number, and chiefly at the larger end. They are smaller and more elongate than those of the *lunifrons*, and the markings are usually finer. Their greatest length is .94 of an inch, their least .75, and their mean .78. Their mean breadth is .56 of an inch, the greatest .62, and the least .50.

SUBGENUS **TACHY CINETA**, CAR.*Tachycineta*, CAR. Mus. Hein. 1850, 1851, 48. (Type, *H. thalassina*, Sw.)

GEN. CHAR. Nostrils lateral, overhung or bordered internally by incumbent membrane.

*Hirundo thalassina*.

Tarsi with the tibial joint covered by overhanging feathers, adherent a short distance along inner face, about equal to middle toe without claw. Lateral toes equal. Adhesion of basal joint of middle toe variable. Tail emarginate only, or slightly forked; fork not exceeding half an inch in depth. Color blue or green above, with or without metallic gloss; with or without white rump. Entirely white beneath.

Nest usually in holes of trees or rocks; eggs pure white, unspotted.

Of this section there are two North American species, differing as follows, both being green above and white beneath:—

Species.

Plumage above soft and velvety without metallic gloss. Sides of head, space around eyes, and whole under parts, white; with the feathers all plumbeous at base. Female duller in plumage. Young with bases of throat-feathers gray to roots.

T. thalassina. Above velvety-green, with various shades and tinges of violet and purple.

Plumage above compact, and with rich green metallic gloss. Sides of head to line with eyes like its upper part. Beneath white; the feathers of chin and throat, and generally of crissum, white to base. A concealed spot in jugulum. Female duller. Young with bases of throat-feathers pure white to roots.

T. bicolor. Above metallic-green. Inside of wings and axillars ash-color.**Hirundo bicolor**, VIEILL.

WHITE-BELLIED SWALLOW.

Hirundo bicolor, VIEILL. Ois. Am. Sept. 1, 1807, 61, pl. xxxi. — AUD. Orn. Biog. 1, pl. xeviii. — IN. Birds Am. 1, pl. xlv. — CASSIN. — BREWER, N. Am. Ool. 1, 1857, 100, pl. iv, fig. 47 (eggs). — LEMMÉY, Aves de Cuba, 1850, 46, lam. vii, fig. 2. — BAIRD, Birds N. Am. 1858, 310. — LORD, Pr. R. A. Inst. Woolwich, IV, 1864, 15 (Br. Columbia; nesting). — JONES, Bermudas, 34 (Sept. 22, 1849). — COOPER & SUCKLEY, P. R. R. Rep. XII, ii, 184. — DALL & BASSISTER, 279 (Alaska). — SAMUELS, 257. — COOPER, Orn. Cal. 1, 1870, 106. *Petrochelidon bicolor*, SCLATER, P. Z. S. 1857, 201. — IB. 1859, 364 (Xalapa). — SCLATER & SALVIN, Ibis, 1859, 13 (Guatemala). *Tachycineta bicolor*, CAR. Mus. Hein. 1850, 48; Jour. Orn. 1856, 4 (Cuba). — GUNDELACH, Jour. Orn. 1861, 330 (common in Cuba). *Hirundo (Tachycineta) bicolor*, BAIRD, Rev. Am. B. 1864, 296. *Hirundo viridis*, WILS. *Hirundo leucogaster*, STEPHENS.

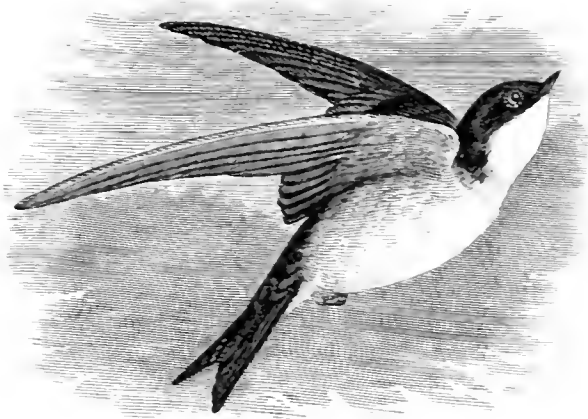
SP. CHAR. Glossy metallic bluish-green above; entirely white beneath. Female duller in color. Length, 6.25 inches; wing, 5.00; tail, 2.65.

Young bird dull sooty-gray above, much like that of *H. thalassina*; but may readily be

distinguished by the feathers of the throat being pure white to their roots, instead of having the concealed bases grayish as in that species.

HAB. Whole United States, and north to Slave Lake, south to Guatemala; Bermuda; Cuba, common in winter. Breeds on table-lands of Mexico.

HABITS. This Swallow has quite an extended distribution. Found throughout North America in the seasons of its migrations, or breeding, it is only a little less restricted in its area of nesting than the preceding species. It breeds from latitude 38° to high Arctic regions, and is also resident throughout the year in the Plateau of Mexico. It is abundant in winter in the West Indies, in Central America, and in Northern South America. It is a common bird about Boston, where it replaces the Purple Martin, and is even more abundant in the British Provinces. Dr. Cooper also found it a very common species in the western portions of Washington Territory, where it was invariably found to breed in hollow trees. In California he states it to be a more or less constant resident, a few wintering in the southern portion of the State. He met with it both at San Diego and at Stockton, in February. He regards them as the hardiest of the Swallows, preferring the coast and the mountain-tops for their residence in that State. At Santa Cruz five or six pairs in 1866 were resident through the winter, where he saw them in January during the coldest of the season. They roosted in the knot-holes in the houses in which they had previously raised their young.



Hirundo bicolor.

This Swallow, in the more thickly settled portions of the country in which it breeds, exhibits a marked departure in many of its habits from those observed in wilder regions. In the latter places we find it a comparatively wild species, avoiding the society of man, and breeding exclusively in hollow trees and stumps, and deserving the name by which it is known in the British Provinces, of the "Wood Swallow." In the islands of Grand Menan, in 1851, where repeated attempts had been made to induce these birds to build in martin-boxes, the endeavor had been entirely unsuccessful. Yet the birds were so abundant that hardly a hollow tree or stump, on certain of the smaller islands, could be found, that did not contain a nest of this species. This is still the case on the Pacific coast, though not exclusively so. It was not until after the publication of his Ornithological Biography that Audubon was aware of any departure from this mode of nesting on the part of this Swallow, although it had not escaped the notice of Wilson.

In Eastern Massachusetts these birds have undergone an entire change of

habit, breeding there exclusively in martin-boxes, and rarely, if ever, nesting in hollow trees, — a fact perhaps attributable to the scarcity of these opportunities along the sea-coast, where this bird is principally found. In Western Massachusetts, Mr. Allen states them to be not very common and the least abundant of the Swallows. Any sheltered and accessible box, however rough it may be, will answer its purpose, whether the more elaborate martin-house, or a mere candle-box with an open end. Mr. Audubon has known them to drive away a Barn Swallow from its nest, and to take possession, but this was probably exceptional. In one case, two small houses for birds put up in the same yard were taken possession of by a single pair of Swallows, and nests built in each; only one, however, of these was made use of. Whether this freak was the result of indecision or from a grasping selfishness, it is not possible to conclude, but apparently the former.

In the rural districts, even on the coast, these birds are not so abundant as in the cities, as in the latter they are less annoyed by other birds. The common Robin is often especially aggressive, seeking to drive them off his assumed premises. In one instance the Robin has been known to station himself on a platform in front of its nest for hours, and persistently refuse to permit its visits. Assistance was sought, and all the Swallows in the neighborhood came to the rescue. They sailed with angry cries over the head of the offender, at times darting down upon him as if to strike at him, but accomplishing nothing. The besieger maintained his ground until the writer intervened and drove him away, when the Swallows once more took possession, and fed their hungry nestlings in peace.

This species breeds from about latitude 38° to the extreme northern regions, and along the Arctic seas, wherever facilities for nesting are found. Richardson found them breeding in hollow trees on the Mackenzie River, in latitude 65° . Everywhere on both coasts they are very common, but are less numerous in the interior. Mr. Dall found it in Alaska from Fort Yukon to the sea. It was known to the Russians as the River Swallow. It was also met with in Sitka, by Bischoff. It has not been observed in Greenland.

During the breeding-season this species is more quarrelsome than any of its kindred, and is often more than a match for larger birds. Coming earlier in the season than the Purple Martin, it will often intrude itself into its premises and maintain possession. They are devotedly attached to their offspring, and bewail any accidents to them or any threatened peril. The same pair will return year after year to the same premises, and they soon become on familiar terms with the members of a family they frequently meet, so much so as to watch, when they have received materials for their nests, for a further supply, and will fly close to the person from whom they receive them. A pair which had thus, year after year, received supplies of feathers for their nests from the younger members of the family in whose yard their nest was built, would almost take them from the hands of their providers. This pair sat so close as to permit themselves to be taken from their nest, and when

released would at once fly back to their brood. They build a loose, soft, and warm nest of fine soft leaves and hay, abundantly lined with down and feathers, with which the eggs are not unfrequently covered. The addition of soft and warm materials is often made during incubation, and the nest is thoroughly repaired before it is used for a second brood, of which they usually have two in a season.

The eggs are of a uniform pure white, and are never spotted. They have a delicate pinkish shade before they are blown. They are of an oblong-oval shape, one end more pointed than the other, and they vary considerably in size. They vary in length from .75 to .875 of an inch, and in breadth from .50 to .56.

Mr. Hepburn states that the great mass of these birds leave California in August, but that a few are resident during the winter. The principal accession to their numbers takes place about the end of February, and they become quite abundant by the end of March. In Vancouver they are a month later. In 1853 Mr. Hepburn states that a pair constructed their nest in a piece of canvass at the end of the yard-arm of a store-ship that lay off the levee at Sacramento. He first noticed them on the 28th of April, when the nest had already made some progress. By the 19th of May there were seven eggs in it which were slightly incubated. The nest was a great mass of hay and dried grasses, in the midst of which was a cup-shaped depression very neatly lined with feathers, some of which bent over, forming a slight dome.

Hirundo thalassina, SWAINS.

VIOLET-GREEN SWALLOW.

Hirundo thalassina, SWAINSON, Phil. Mag. 1, 1827, 365 (Mexico). — AUD. — BREWER, N. A. Oöl. 1, 1857, 102 (the fig. pl. v, fig. lxxiv of egg belongs to another species). — BAIRD, Birds N. Am. 1858, 311. — LORD, Pr. R. A. Inst. Woolwich, IV, 1864, 115 (Vancouver Isl.; nests in holes of trees). — COOPER & SUCKLEY, P. R. R. Rep. XII, 11, 185 (W. T.). — COOPER, Orn. Cal. 1, 1870, 107. *Chelidon thalassina*, BOIE, Isis, 1844, 171. *Tachycineta thalassina*, CAB. Mus. Hein. 1850, 48. *Hirundo* (*Tachycineta*) *thalassina*, BAIRD, Rev. Am. B. 1864, 299. *Petrochelidon thalassina*, SCLATER & SALVIN, Ibis, 1859, 13 (Guatemala). — IB. P. Z. S. 1864, 173 (City of Mex.).

SP. CHAR. Tail acutely emarginate. Beneath pure white. Above soft velvety-green, with a very faint shade of purplish-violet concentrated on the nape into a transverse band. Rump rather more vivid green; tail-coverts showing a good deal of purple. Colors of female much more obscure. Length, 4.75; wing, 4.50; tail, 2.00.

HAB. Western and Middle Provinces of United States, south to Guatemala, east to the Upper Missouri. Breeds on Plateau of Mexico (SUMICHRAST).

Young birds are of a dull velvety grayish-brown, not unlike the shade of color of *Cotyle riparia*, but may be distinguished by the absence of the tuft of feathers at base of toes, and the gray (not white) bases of the feathers of under parts. There is only an ashy shade across the breast, not a pectoral band.

There is much variation among individuals regarding the distribution of the semi-metallic tints of the upper parts; generally the whole dorsal region is overlaid by a "dusting," as it were, of soft brownish-purple; in specimens colored thus, the upper tail-coverts are pure dark-green, without a tinge of purple. In other specimens, on the contrary, the dorsal region is nearly pure green, that of the upper tail-coverts less golden, and mixed with a very beautiful rich soft violet.

Winter specimens from Guatemala and Mexico have the upper secondaries very sharply and broadly bordered terminally with pure white.

HABITS. The Violet-green Swallow is a common bird, from the central plains of North America to the Pacific coast, and is found at different seasons from Washington Territory to South America. It has been found as far east as Nebraska, and in abundance at Fort Bridger, in Utah.

As observed, in Washington Territory, by Drs. Suckley and Cooper, it is said to arrive at Puget Sound early in May, and to frequent entirely the high prairies bordered with oak and other deciduous trees, in the knot-holes of which, or in deserted Woodpeckers' holes, it breeds. Its song is described as pleasing and varied, but rather weak. They found it to be quite abundant in the interior of Oregon and of Washington Territory, and in its habits and mode of flight hardly distinguishable from the *bicolor*.

In California, according to the observations of Dr. Cooper, it arrives in Santa Clara Valley as early as March 15, where it chiefly frequents the groves of oaks along the sides of the valleys, across the whole Coast Range, excepting in the immediate neighborhood of the sea. Their nest, so far as known, is always in the knot-holes of oaks, and they have never been known to breed in the immediate vicinity of dwellings, excepting only when their favorite trees were so situated. It is generally in an inaccessible place, and their eggs are not often obtained. These are pure white, resembling those of the *bicolor* and the *riparia*. Townsend states that he found them nesting in the deserted nests of the *H. lunifrons*, but in this he may have been mistaken. The eggs he gave to Mr. Audubon as those of this species undoubtedly belonged to the *lunifrons*. They leave California for the south in September.

Dr. Coues also found this Swallow in Arizona, where it was the most abundant and characteristic Swallow of the pine regions of that Territory. It is a summer resident at Fort Whipple, where it arrives about March 20, and remains until late in September.

In the Province of Vera Cruz, Mr. Sumichrast found this Swallow resident, not only in the hot belt of the coast, but also in the temperate region and throughout the plateau, at almost all heights, and was almost everywhere very common.

Mr. Salvin also states that early in March great numbers occur near Duenas, Guatemala, where they remain for a short time. During that time they are to be found flying over the open land to the south of the Lake of Duenas.

Mr. Hepburn states that this Swallow has quite an extensive range along the Pacific coast, but is restricted as to the localities it inhabits. At the Pulgas Rancho, near San Francisco, it is even more common than the *bicolor*, while a few miles from thence not one is to be seen. He has also seen it on the banks of the Fresno, near its junction with the San Joaquin River, and again in the Yosemite Valley, without meeting with a single specimen in the intervening country. About Victoria this was the prevailing species. These Swallows, so far as Mr. Hepburn observed, always build in holes of trees. Their nest, he states, is formed of a few fine dry stems of grass, placed at the bottom of the hole, covered over with a thick mass of feathers. The eggs, he adds, are pure white, large for the size of the bird, measuring .81 of an inch in length by .50 in breadth. These Swallows have two broods in a season. In 1864 he noted their arrival in San Mateo County on the 28th of March.

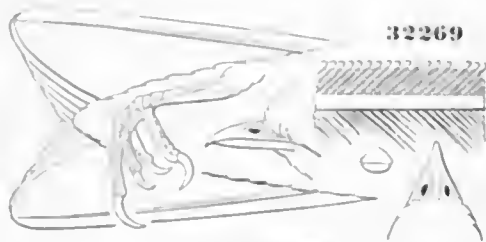
Mr. Ridgway writes that he first met with the Violet-green Swallow in May, on the islands in Pyramid Lake. He there found it very abundant among the cliffs of calcareous tufa of which the island was composed. They were seen to enter the fissures of the rock to their nests within, which it was found impossible to reach. They were again seen in July among the limestone cliffs along the cañons of the East Humboldt Mountains, associated with the White-throated Swift, building like them in the small horizontal crevices or fissures on the face of the precipice. He was not able to get at more than two of their nests, the first in a horizontal fissure just wide enough to admit the hand, and about eight inches from the entrance. It contained five young. The nest was similar to that of the Bank Swallow, and was composed of sticks, straws, and feathers. In the other the female was dead on her nest, and the eggs were broken. They were white, like those of the *H. bicolor*.

In its flight this bird is said to greatly resemble the White-bellied Swallow, but is distinguishable by the contrast of the three colors of its upper plumage. These two species are rarely to be seen in the same localities, the *bicolor* preferring wooded, and this species rocky localities.

Mr. Lord states that this beautiful Swallow was common from the coast along the entire course of the boundary line, to the summit of the Rocky Mountains. They were among the earliest visitors at Colville, arriving in small flocks in March, but in greater numbers in May and June. They build in June, making their nests in holes in dead trees as high as they can get, and lay four or five eggs. The nest is made of feathers and soft hair. They assemble in large flocks before migrating in September. Mr. Lord felt pretty sure their nesting-holes were excavated in the soft wood by themselves, though their soft beak seems ill adapted to perform such labor.

GENUS **STELGIDOPTERYX**, BAIRD.*Stelgidopteryx*, BAIRD, Birds N. Am. 1858, 312. (Type, *Hirundo serripennis*, AVB.)

GEN. CHAR. Bill rather small; nostrils oval, superior, margined behind, but scarcely laterally by membrane, but not at all overhung; the axes of the outline converging. Frontal feathers soft, and, like chin, without bristles. Tarsi equal to middle toe without claw; the upper end covered with feathers all round, none at lower end. Basal joint of middle toe adherent externally nearly to end; internally, scarcely half. Lateral toes about equal, their claws not reaching beyond base of middle claw.

*Cotyle serripennis*.

Tail slightly emarginate; the feathers broad, and obliquely rounded at end. Edge of the wing rough to the touch; the shafts of the fibrillae of outer web of outer primary prolonged and bent at right angles into a short stiff hook. Nest (of *S. serripennis*) in holes in banks; eggs pure white, unspotted.

Color dull brown above.

The great peculiarity of this genus consists in the remarkable roughness of the edge of the wing, said to occur also in *Psolidoprocne*, CAB. The object is uncertain, but is probably to enable the bird to secure a foothold on vertical or inclined rocks, among or on which it makes its nest. A favorite breeding-place of *S. serripennis* is in the piers and abutments of bridges, and these hooks might render essential aid in entering into their holes.

The birds of this genus have usually been referred to *Cotyle*, which, however, they resemble only in color. The nostrils are exposed, instead of being overhung; the tarsus is bare below, not feathered, and the lateral claws are considerably curved, and not reaching beyond the base of the lateral, as in *Cotyle*. The structure of the wing is very different.

There are at least five species or races of this genus in America, although only one belongs with certainty to the United States. A second, however, (*S. fulvipennis*), Mexican and Guatemalan, is not unlikely to occur in Arizona or New Mexico. This differs in having the chin and throat reddish-fulvous, not mouse-gray; the belly tinged with yellow.

Stelgidopteryx serripennis, BAIRD.

ROUGH-WINGED SWALLOW.

Hirundo serripennis, AVB. Orn. Biog. IV, 1838, 593. — *Ibid.* Birds Am. I, 1840, 193, pl. li.
Cotyle s. BON. Consp. 1850, 342. — CASSIN. — BEFWER, N. Am. Ool. I, 1857, 106, pl. iv, fig. 50 (eggs). — BAIRD, Birds N. Am. 1858, 313. — LORD, Pr. R. A. Inst. IV, 1864, 116 (Br. Columbia). — COOPER & SECKLEY, P. R. R. Rep. XII, 11, 186 (W. Terr.). — HELLMANN, P. R. R. X; Williamson's Rep. 26 (San Antonio, Tex.; breeding). — COOPER, Orn. Cal. I, 1870, 110. *Stelgidopteryx s.* BAIRD, Birds N. Am. 1858, 312; Rev. 314.

SP. CHAR. (No. 32,269 ♂.) Above smoky-brown, rather deeper on the head, perhaps a little paler on the rump. Larger quills and tail-feathers dusky-brown; the secondaries and greater coverts sometimes lighter along their external edges. The under parts (for about half the total length) from bill to and including breast, with the sides of body and lining of wings, mouse-gray, rather lighter along the throat; the rest of under parts, including crissum, white, the latter with the shafts sometimes dusky, and very rarely with dusky blotches at the ends of the longer feathers.

Young birds (as in 1,120) differ in a tinge of reddish-fulvous on the upper parts; the wing-coverts, secondaries, and inner primaries margined more or less broadly with a brighter shade of the same. The gray of the under parts is also washed with this color, especially on the chin and across the breast. The hooks of the edge of the wing have not yet become developed.

(No. 32,269 ♂, fresh specimen before being skinned.) Total length, 5.40; expanse of wings, 12.20; wing from carpal joint, 4.50.

(No. 32,269 ♂, prepared specimen.) Total length, 5.20; wing, 4.50; tail, 2.25, depth of fork, .15; difference of primaries, 2.28; length of bill from forehead, .40, from nostril, .24, along gape, .56, width of gape, .43; tarsus, .45; middle toe and claw, .57; claw alone, .19; hind toe and claw, .41; claw alone, .16.

HAB. Whole United States (exclusive of Northeastern States?) south to Central Mexico.

HABITS. The Rough-winged Swallow was first met with by Audubon, in Louisiana, but described by him from specimens afterwards procured near Charleston, S. C. He knew nothing in regard to its habits, and its distribution was equally unknown to him. It has since been found, but nowhere very abundantly, in various parts of the United States. It has not been met with on the Atlantic coast farther to the north than New Jersey and Pennsylvania. On the Pacific coast it is more common. Dr. Suckley speaks of it as quite abundant both in Oregon and in Washington Territory. Dr. Cooper, in his Zoölogy of Washington Territory, speaks of it as common about the sandy cliffs of the bays and inlets of that coast, arriving near the Columbia in May, and remaining only until the middle of August, when all these Swallows go southwards, though their last brood is hardly able to fly. He says that they burrow holes in the soft sandy banks near the tops of cliffs, and have generally the same habits as the common Bank Swallow. They have no song, only a few chirping calls.

Dr. Cooper, in his Report on the birds of California, further states that this Swallow, in summer, is found throughout the lower portions of that State. He saw them at Fort Mojave as early as the 27th of February, and as he has met with them at San Diego in November, and also in January, he thinks they may winter within the State. He describes their burrows in the sandy banks of rivers as being to the depth of three feet, crowded very near together, and near the upper edge of the bank, in no wise different from the nesting of the common *C. riparia*. The nests are composed chiefly of dry grasses, with a few feathers, and contain five white eggs. Occasionally, however, they resort to natural clefts in the bank or in buildings, and to knot-holes in trees. In the fall they congregate in great numbers about certain favorite spots, and keep much together in flocks. At night they roost in

their burrows. In Arizona, according to Dr. Cones, they are summer residents, breeding abundantly, arriving late in April and remaining until nearly the last of September.

At Eagle Pass, Mr. Dresser met these birds, arriving from the South, on the 21st of February. There, and also at San Antonio, they were very common, breeding in the towns, making their nests under the eaves and in holes in the old walls, depositing their eggs by the 25th of April. Dr. Kennerly also found this Swallow very abundant along the Colorado River in February. Its flight seemed to him to be like that of the common Barn Swallow. Dr. Heermann frequently met with this species during the journey from the junction of the Gila and Colorado Rivers through Mexico, New Mexico, and Texas, to San Antonio. In the latter place he found them breeding almost entirely in crevices in the walls of houses.

In the vicinity of Washington, Dr. Cones found this Swallow a summer resident, but rather rare, arriving in the third week of April, and leaving about the middle of September.

Mr. Ridgway speaks of this bird as one of the most abundant Swallows of the West, inhabiting the river valleys, and breeding in holes in the banks of the rivers. He says that in Southern Illinois it is much more abundant than the *C. riparia*, though both nest in the same banks.

This species was first found breeding in Carlisle, Penn., by Professor Baird, in the summer of 1843. The following year I visited this locality early in June, and had an opportunity to study its habits during its breeding-season. We found the bird rather common, and examined a number of their nests. None that we met with were in places that had been excavated by the birds, although the previous season several had been found that had apparently been excavated in banks in the same manner with the Bank Swallow. All the nests (seven in number) that we then met with were in situations accidentally adapted to their need, and all were directly over running water. Some were constructed in crevices between the stones in the walls and arches of bridges. In several instances the nests were but little above the surface of the stream. In one, the first laying had been flooded, and the eggs chilled. The birds had constructed another nest above the first one, in which were six fresh eggs, as many as in the other. One nest had been built between the stones of the wall that formed one of the sides of the flume of a mill. Two feet above it was a frequented footpath, and, at the same distance below, the water of the mill-stream. Another nest was between the boards of a small building in which revolved a water-wheel. The entrance to it was through a knot-hole in the outer partition, and the nest rested on a small rafter between the outer and the inner boardings.

The nests were similar in their construction to those of the Bank Swallow, composed of dry grasses, straws, and leaves, and lined with a few feathers; but a much greater amount of material was made use of, owing, perhaps, to the exposed positions in which they were built.

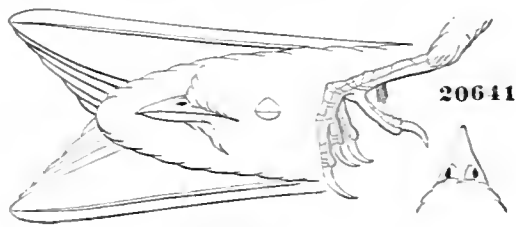
The eggs, six in number, in every instance that we noticed, were pure white, about the size of those of the *riparia*, but a little more uniformly oblong in shape and pointed at one end. Their length varies from .78 to .69 of an inch, the average being .75. Their average breadth is .53 of an inch.

GENUS **COTYLE**, BOIE.

Cotyle, BOIE, Isis, 1822, 550. (Type, *Hirundo riparia*, L.)

GEX. CHAR. Bill small; nostrils lateral, overhung by a straight-edged membrane. Tarsus about equal to middle toe without claw; feathered at upper end, especially on inner face, and having also a small tuft of feathers attached to posterior edge near the hind toe. Middle toe with basal joint adherent externally to near the end, half-way internally, the claws comparatively little curved, the lateral reaching beyond the base of the middle. Tail slightly forked. Color dull lustreless brown above, in *riparia* white beneath with gray pectoral band. Nests in holes in banks; eggs white.

Many American birds have been referred to *Cotyle*, but the only one really belonging to the genus is the cosmopolitan *C. riparia*. The peculiarity of the genus consists essentially in the tuft of tarsal feathers at the base of the hind toe, and the unusual length of the lateral claws, combined with the lateral nostrils overhung by membrane. By these characters the genus is very easily distinguished from *Stelgidopteryx*.



Cotyle riparia.

Cotyle riparia, BOIE.

BANK SWALLOW; SAND MARTIN.

Hirundo riparia, LINN. S. N. I, 1766, 344. — WILS.; AUD. — LEMBEYE, Aves de Cuba, 1850, 47, lam. vii, fig. 3. — JONES, Nat. Hist. Bermuda, 34 (occasional, Aug. and Sept.). *Cotyle riparia*, BOIE, Isis, 1822, 550. — CASSIN. — BREWER, N. A. Oöl. I, 1857, 105, pl. iv, fig. 49 (eggs). — CAB. Jour. 1856, 4 (Cuba). — BAIRD, Birds N. Am. 1858, 313; Rev. 1864, 319. — IB. 1861, 93 (Costa Rica [?]). — GUNDLACH, Cab. Jour. 1861, 330 (very rare in Cuba). — MARCH. Pr. A. N. Sc. 1863, 297 (Jamaica; very rare). HEERMANN, P. R. R. X, 36 (California; abundant?). — DALL & BANNISTER, 280 (Alaska). — COOPER, Orn. Cal. I, 1870, 110. — SAMUELS, 258. *Hirundo cinerea*, VIEILL. *Hirundo riparia americana*, MAX.

SP. CHAR. *Adult*. Above grayish-brown, somewhat fuliginous, with a tendency to paler margins of the feathers. Beneath pure white, with a band across the breast and the sides of the body like the back. Length, 4.75; wing, 4.00; tail, 2.00.

Young birds have less emarginate tails, and the feathers of back, rump, and wings edged with whitish.

HAB. The whole of North America; Bermudas; Greater Antilles; Costa Rica; Western Brazil (PELZ.). Also found in the northern parts of the Old World.

A critical examination has failed to reveal any difference between European and American specimens of this bird.

HABITS. The common Bank Swallow as we know it, or Sand Martin as



Cotyle riparia.

it is called in England, is nearly or quite cosmopolitan in its distribution. Found throughout Europe in the season of reproduction, and in portions of Africa in the winter months, it is equally common throughout North America in the summer, and probably winters in Mexico and in Central and South America, though it is not mentioned by Sumichrast as a bird of Vera Cruz. It is said to occur in various parts of the continent of Africa, and in Europe it extends its migrations to the extreme northern regions. It has also been met with in India and in Siberia. Mr.

Salvin obtained several specimens at Duenas, Guatemala, in September, 1861, having previously observed it about the Lake of Yzabah.

On both continents it is somewhat local in its distribution, in favorable localities being quite abundant, and in others not known to exist. It is an early spring visitant wherever found, appearing in England by the 24th of March, and even in our high Arctic regions early in May, often in such inclement weather that it is obliged to take refuge in holes. Mr. Dall met with this species in Alaska, in favorable situations, in immense numbers. He counted on the face of one sand-bluff over seven hundred nest-holes made by these birds, and all of them apparently occupied, so that the bluff presented the appearance of an immense honeycomb alive with bees. He states that it takes the bird four days to excavate its nest. Rev. F. O. Morris, on the other hand, who has closely watched their operations in England, says that it requires a fortnight, and that the weight of sand a pair of these birds removes is twenty ounces in a day. Pebbles of more than two ounces in weight have been known to be taken out by them.

The flight of this species is rapid, but unsteady and flickering. In searching for their food they skim low over the surface of both land and water, dropping upon the latter, as they fly, to drink or to bathe. Their food consists of the smaller kinds of winged insects, which they pursue and capture, dashing at them at times even on the water. They usually feed their young with larger kinds than they eat themselves.

It has not been observed in Greenland, but Richardson found it in colonies of thousands at the mouth of Mackenzie's River, in the 68th parallel. It is a very social bird, usually breeding together in large communities, and is

more independent of man than most of its family, owing him no other favors than those incident to excavations through sand-banks, of which it avails itself. The nests of these Swallows are placed in excavations made by them in the banks of rivers, cliffs by the sea-shore, and similar favorable situations. These are usually as near the surface of the ground as the nature of the soil permits to be readily penetrated, though the bird has been known to work its way even through hard gravel. Their depth varies from fourteen inches to four feet, though two feet is the usual distance.

Mr. Augustus Fowler mentions a remarkable instance of sagacity and provident forethought in these birds, not easily separable from reason. In the town of Beverly, in a stratum of sandy loam, he observed each season a colony of some twenty or thirty pairs of these birds. In this place these birds never burrowed more than two or three feet. Within a mile of this place another colony excavated a bank in which the layer of loam was mixed with small stones. In this bank they excavated to the depth of five, seven, and even nine feet. Why was there this extraordinary difference in the length of burrows made by the same species, in situations not more than a mile apart? The reason for this difference, upon examination, became very obvious. We give the explanation in Mr. Fowler's own words: "In one bank, where the earth was of a fine sandy loam, easily perforated, from the entrance to the extremity the burrows did not exceed three feet in length; while in the other bank, with harder loam to work in, one burrow was found nine feet in length. After examining six holes of nearly equal length, it appeared that these little birds had sufficient reason for extending their labors so far into the earth. In every instance, where they met with a spot free from stones they finished their burrows; thus showing great care for the welfare of their eggs or young by avoiding, in the stony soil, a catastrophe so great as would befall their treasures if by accident one of these stones should fall upon them."

The work of perforation they perform with their closed bill, swaying the body round on the feet, beginning at the centre and working outwards. This long and often winding gallery gradually expands into a small spherical apartment, on the floor of which they form a rude nest of straw and feathers. The time occupied in making these excavations varies greatly with the nature of the soil, from four or five days to twice that number.

Their eggs are five in number, pure white, and when unblown have a fine roseate hue. They are oval in shape, larger at one end, and pointed at the smaller. Their average length is .72 of an inch, and their average breadth .47.

We now come to the consideration of three families of Oscine birds, of pre-eminently denti-rostral type, having certain common characters by which they are distinguishable, with but little difficulty, from all others. In their close relationship it has been questioned by many whether they do not all belong under one head, but they are more generally considered distinct. The common characters, and those peculiar to each, are as follows:—

COMMON CHARACTERS. Bill stout, and considerably hooked at tip, or with the point bent abruptly downward; with a deep notch, and sometimes a tooth or lobe just behind the notch; the tip of the lower mandible likewise frequently bent up, and with a notch behind it. The nostrils lateral, the bristles of the month generally well developed. The primaries are ten (except in a few *Vireos*), the outer from one fourth to one half the second. Tail variable. Tarsi scutellate anteriorly; sometimes with a tendency to division on the lateral plates; hitherto not met with. Basal joints of toes more adherent. Separated from *Turdidae* by greater adhesion of toes; from *Troglodytidae* by notched and hooked bill, etc.

A. Basal phalanx of anterior toes abbreviated; that of median toe decidedly shorter than the basal of inner, or the two basal of outer, and adherent for its whole length on both sides to the lateral (i. e. not free at all). Lateral plates of tarsus undivided, except at extreme lower end.

Vireonidæ. Gonys more than half the length of lower jaw (from tip to angle of mouth), usually longer than width of mouth, which is narrow. Bill conical, much compressed, decurved at end and notched, but scarcely toothed. Frontal feathers bristly and erect, or bent but slightly forward. Nostrils overhung by membrane. Tarsus longer than middle toe and claw. Lateral toes generally unequal; outer claw reaching half-way along middle claw.

B. Basal phalanx of middle toe about as long as the basal of inner, or the two basal of outer; free externally, at least for about one third its length, internally for about one half. Lateral plates of tarsus with decided tendency to subdivision (except in *Myiadestinae*).

Ampelidæ. Gonys decidedly less than half the length of lower jaw, or than width of mouth, which is very broad and deeply cleft. Bill triangular, much depressed, decurved at end and notched, with moderate though decided tooth. Frontal feathers rather soft, scarcely bristly or erect. Nostrils overhung by membrane. Tarsus equal to or shorter than middle toe and claw. Lateral toes nearly equal; outer claw reaching only to base of middle claw.

Laniidæ. Gonys about half the length of lower jaw; about equal to width of mouth. Bill very powerful and raptorial, much compressed, with a strongly marked hook, notch, and tooth at end. Frontal feathers very bristly, and directed forwards, so as to conceal nostrils and base of bill. Nostrils with bony walls, except behind. Tarsus longer than middle toe and claw, sometimes much scutellate on sides. Lateral claws nearly equal; outer claw reaching a little beyond base of middle claw.

FAMILY **VIREONIDÆ.** — THE VIREOS.

The essential features of this family appear to consist in the combination of the dentirostral bill, notched in both mandibles; the ten primaries (except *Vireosylvia*), of which the outer is usually from one fourth to one half the second; the rather short, nearly even tail, with narrow feathers, and the great amount of adhesion of the anterior toes, — the whole basal joint of the middle being generally united on both sides to the adjacent joints, and decidedly shorter than the basal of inner or two basal of outer. The outer lateral toe is generally appreciably longer than the inner, reaching considerably beyond the base of the middle claw. The tarsi are always distinctly scutellate anteriorly. The young are never spotted, or streaked as in the Thrushes; nor, indeed, do the adults exhibit such markings.

The *Vireonidæ* are peculiar to the New World, and are widely distributed, although but one genus belongs to the United States.

GENUS **VIREO**, VIEILL.

Vireo, VIEILL. Ois. Am. Sept. I, 1807, 83. (Type, *Muscicapa noveboracensis*, GM.)

No great violence will be done by considering all the American Vireos as belonging to one genus, divisible into three subgenera, as, however different the extremes of the series may be from each other, the gradation is quite complete.

The North American species take a wide range during their southern winter migration, only paralleled in this respect by the *Sylviolidæ*; they do not visit the West Indies, save as very rare stragglers to Cuba (*V. olivaceus*, *solitarius*, *flavifrons*, and *noveboracensis*). They all have a melodious song, and, so far as known, make a deep nest, suspended by its upper edge between the forks of a horizontal twig. The eggs are white, generally with a few reddish or brown blotches.

Quite a number are characterized by having the eyes white, red, or yellow.

Subgenera.

Vireosylvia. Bill compressed, narrow; culmen and commissure straight, the tip abruptly curved (or, if this is not the case, there is no trace of light bands on the wing; see section "b"). Superciliary stripe continued back to the occiput. No trace of light bands on the wing. No conspicuous ring round the eye.

a. No spurious primary. Bill compressed, its tip abruptly hooked; culmen and commissure straight. Crown decidedly more ashy than the back.

Sp. *flavoriridis*, *barbatulus*, *olivaceus*, *philadelphicus*.

b. An acute spurious primary. Bill depressed, the tip only slightly hooked;

culmen slightly curved. Crown scarcely more ashy than back . . . Sp. *gilvus*.

Lanivireo. Bill compressed, stout; culmen arched from the base, commissure curved. Superciliary stripe stopping at posterior angle of the eye and curving under it, enclosing the eye in a conspicuous orbital ring, interrupted only in front. Two conspicuous white bands on the wing.

- a. No spurious primary *Sp. flavifrons.*
 b. With an acute spurious primary *Sp. solitarius, plumbeus.*

Vireo. Bill stout, scarcely compressed, sub-cylindrical. First primary not spurious, or, if so, not acute.

- a. Two conspicuous light bands on wing . . . *Sp. atricapillus, noveboracensis, huttoni.*
 b. One distinct light band on wing, and this not sharply defined, the anterior one being almost obsolete *Sp. belli, pusillus, vicinior.*

SUBGENUS **VIREOSYLVA**, BON.

Vireosylva, BON. Geog. Comp. List, 1838. (Type, *Muscicapa olivacea*, LIN.)

Phyllosinus, CAB. Arch. 1847, I, 321. (No type mentioned; name proposed as substitute for *Vireosylva*.)

GEN. CHAR. Wings long and pointed, one third or one fourth longer than the nearly even or slightly rounded tail. First quill very small (less than one third the second), sometimes apparently wanting. Second quill longer than the seventh, much longer than the



Vireo olivaceus.

secondaries. Tarsi short (scarcely exceeding .70 of an inch); toes rather long. Body slender and elongated. Bill slender, narrow, straight; the culmen straight for its basal half, the commissure quite straight; light horn-color, paler beneath. Feet weak. Type, *V. olivaceus*.

Species and Varieties.

COMMON CHARACTERS. All species olive above, white or yellowish beneath. An ashy or brownish cap, contrasting more or less abruptly with the olive back. A whitish superciliary stripe extending to the nape, and a dusky one to and behind the eye. No light bands on the coverts. Inside of wings (flanks sometimes) and crissum yellowish, otherwise usually white beneath.

- No spurious primary *Series I.*
 A spurious primary *Series II.*

Series I. (No spurious primary.)

A. A dusky "moustache" or cheek stripe along each side of the throat.

1 **V. calidris.** Eyes red?

a. No distinct dusky line along side of the crown.

Light stripes of the head dingy brownish-buff; crown scarcely ashy; back olive-brown; crissum and lining of the wing pure pale

yellow. Wing, 3.20; tail, 2.25; bill, .42. *Hab.* Jamaica; Santo Domingo, Porto Rico, Santa Cruz, St. Thomas, and Sombrero.

var. *calidris*.¹

Light stripes of the head dingy grayish-white; crown distinctly ashy; back grayish-olive; crissum and lining of the wing scarcely yellow. Wing, 3.20; tail, 2.35; bill, .42. *Hab.* Cuba, Bahamas, and South Florida var. *barbatulus*.

b. A distinct dusky line along each side of crown.

Colors as in *barbatula*, but "mustache" broader and more conspicuous, and crown much purer ash. Wing, 3.30; tail, 2.50; bill, .48. *Hab.* Barbadoes var. *barbadense*.²

B. No "mustache."

a. A dusky line along each side of crown.

2. **V. olivaceus.** Grayish olive-green above; beneath white, tinged laterally with dull olive; crissum and lining of wing scarcely yellow; inner edges of quills white. Eyes red.

1. Wing, 3.30; tail, 2.40; bill, .38. *Hab.* Eastern Province of North America, south to Northern South America . . . var. *olivaceus*.

2. Wing, 2.50; tail, 1.80; bill, .33. *Hab.* Eastern South America.

var. *chivi*.³

3. **V. flavoviridis.** Yellowish olive-green above; beneath white medially, bright greenish olive-yellow laterally; crissum, lining of wings, and inner edges of quills, light yellow. Eyes yellow.

1. Wing, 3.15; tail, 2.55; bill, .41. *Hab.* Middle America north of Panama var. *flavoviridis*.

2. Wing, 2.80; tail, 2.25; bill, .36. *Hab.* South America, from Buenos Ayres northward; Guatemala var. *agilis*.⁴

b. No dusky line on side of crown.

4. **V. magister**.⁵ Large. Above sooty-olive, more virescent posteriorly; crown without ashy tinge. Beneath similar, but lighter, whitish medially. Crissum and lining of wing very faintly yellow; inner edges of quills white. Eyes? Wing, 3.05; tail, 2.40; bill, .45. *Hab.* Honduras (Belize).

5. **V. philadelphicus.** Small. Above grayish-green; crown ashy. Beneath light yellow, deepest on the jugulum, whitish on belly. Eyes? Wing, 2.70; tail, 1.95; bill, .27. *Hab.* Eastern Province of North America; in winter south to Costa Rica.

Series II. (A spurious primary.)

C. No dusky line along side of crown. No "mustache."

6. **V. gilva.** Eyes hazel (in all?).

a. Crown nearly like the back.

Above olive-gray, rump more virescent; crown more ashy. Beneath dingy whitish, with a strong tinge of dingy buff from bill

¹ *Vireosylvia calidris*, BAIRD, Rev. Am. Birds, 1865, 329. (*Motacilla calidris*, L. Syst. Nat. 10th ed. 1758, 184.)

² *V. calidris* var. *barbadense*, RIDGWAY.

³ *V. olivacea* var. *chivi*. *Vireosylvia chivi*, BAIRD, Rev. 327. (*Sylvia chivi*, VIEILL. NOUV. Dict. XI, 1817, 174.)

⁴ *V. flavoviridis* var. *agilis*. *Vireosylvia agilis*, BAIRD, Rev. 338. (*Lanius agilis*, LICHT. Verz. Doubl., 1823, no. 526.)

⁵ *V. magister*, BAIRD.

along sides and across breast. Bill, .14 deep, .30 long; wing, 2.85; tail, 2.05. *Hab.* Eastern Province of United States. var. *gilvus*.

Similar, but above more grayish, and beneath with the buff tinge almost absent. Bill, .11 deep, and .22 long; wing, 2.80; tail, 2.15.

Hab. Western Province of United States. var. *swainsoni*.

b. Crown very different from the back (dark brown).

Above olive-brown; rump more virescent; crown dark snuff-brown. Beneath uniform light yellow, throat whitish. Bill, .15 deep, .30 long; wing, 2.60; tail, 2.10. *Hab.* Middle America, from Ecuador to Honduras. var. *josepha*.¹

Vireosylvia calidris, var. *barbatulus*, BAIRD.

FLORIDA GREENLET.

Phyllomanes barbatulus, *CAB. Jour.* III, 1855, 467 (Cuba). — GUNDLACH, *Cab. Jour.* 1861, 324 (Cuba). — *IN. Repertorio*, Cuba, 1865. *Vireosylvia barbatula*, BAIRD, *Rev. Am. B.* 1864, 331. *Vireo altiloquus*, GAMBEL, *Pr. A. N. Sc.* 1848, 127 (Florida). — BAIRD, *Birds N. Am.* 1858, 354 (Florida). *Vireosylvia altiloqua*, CASSIN, *Pr. A. N. Sc.* 1851, 152. — *IN. Illust.* 1854, 8, and 221, pl. xxxvii (Florida). — BREVANT, *Pr. Bost. Soc.* V, 1859, 113 (Bahamas). — LAWRENCE, *Ann. N. Y. Lyc.* 1860 (Cuba).

SP. CHAR. (No. 25,958 ♂, Cuba.) Proportion of quills as in var. *calidris*, 2 = 3, 4, 1, 5, but the tips of the quills closer together, and the first quill about half or a little less than half the distance between fifth and fourth; the quills narrower.



Vireosylvia barbatulus.

Colors similar to those of var. *calidris*, but of a purer and paler olive above; the back tinged with ash; the cap purer ash, and better defined, without olivaceous wash, its dusky edge more distinct. The superciliary stripe whitish or grayish, with the cheeks paler, and both, as well as the chin, without the buff tinge.

Under parts nearly pure white, very faintly tinged across the breast with ash; the sides olivaceous; the crissum and axillars pale sulphur-yellow. Total length, 5.50; wing, 3.15; tail, 2.50; difference of first and second quills, .18; of fifth and second, .22; length of bill from forehead, .82, from nostril, .46, along gape, .89; tarsus, 72; middle toe and claw, .60; claw alone, .21; hind toe and claw, .50; claw alone, .23.

HAB. Cuba; the Bahamas; and Charlotte Harbor, Florida. (Western Coast.)

This *Vireo* has been taken several times at Charlotte Harbor, in Florida,

¹ *V. gilva* var. *josepha*. *Vireosylvia josepha*, BAIRD, *Rev.* 1865, 344 (*Vireo josepha*, SELATER, *P. Z. S.* 1859, 137, pl. div). Comparing typical examples of this "species" with those of *gilvus* from North America, they appear very widely different indeed, so far as coloration is concerned, though nearly identical in form. But a specimen from an intermediate locality (54,262, Orizaba, Mexico, F. SMITHCRIST) combines so perfectly all the characters of the two, that it would be impossible to refer it to one or the other as distinct species. It therefore becomes necessary to assume that the *V. josepha* is a permanently resident tropical race of a species of which *V. gilvus* is the northern representative; which theory is strengthened by the fact that of the latter there are no specimens found south of the United States, indicating that in winter it does not pass beyond their limit, or at least not far to the southward.

and is thus entitled to a place in our fauna. Its distinction from a closely allied race in Jamaica, Hayti, etc., var. *calidris*, is shown on page 359.

A specimen belonging to Mr. Salvin ("No. 187"), from "Isthmus of Panama," we cannot distinguish satisfactorily from typical examples of the present race, with which it is to be compared, and not with *calidris*. The colors are quite identical with those of *barbatulus*. In size it is slightly larger, the wing measuring 3.25 instead of 3.15; the tail 2.50, instead of 2.35 (from exposed base of feathers); the bill is thicker, being .20 instead of .18 deep; the third quill is longest, the second intermediate between it and the fourth; the first intermediate between the fourth and fifth. In *barbatulus* the second is longest, the third and fourth successively a little shorter. It is not improbable that other specimens from that locality may show greater differences, as the specimen under examination is in rather worn plumage, and has the tip of the bill broken off.

HABITS. This species only claims a place in our avifauna on the ground of its presence in Florida. How abundant it is there is not determined, further than it has been observed within a restricted locality by Dr. Heermann. This was at Charlotte Harbor, on the southwestern coast. They appeared to be visitors only, from a more southern clime. They reached Florida in their northern migrations, remaining only for a short season, but evidently staying long enough to breed. Dr. Heermann states that this species resembles, in manners and in appearance, the common Red-eyed Vireo of the more northern States. He describes its song as clear and musical, and very distinctly uttered. It was constantly on the search for insects, and appeared even more active than any of the northern species, darting among the foliage, peering into crevices and cobwebs, suspended from branches with its back downward, and occasionally chasing a flying insect in the manner of a true Flycatcher. These movements were usually accompanied by a song. This species was not abundant, though Dr. Heermann saw it frequently, and obtained several specimens.

Dr. Bryant found this species very abundant at the Bahamas, arriving there about the first of May. All the specimens he obtained were males, the females not arriving there until after the 13th of May. The notes of these birds, he states, vary, though the most common one resembles *whip tom kelly pheūū*, pronouncing the first word distinctly.

This bird,¹ in Brown's History of Jamaica, is called "Whip-tom-kelly," from the supposed resemblance of its notes to these articulate sounds, and this popular appellation has been given it by various other writers. Mr. Gosse, however, in his Birds of Jamaica, calls this bird "John-to-whit," and can find no resemblance in its notes to the words referred to. He describes its song as uttered with incessant iteration and untiring energy, and as resembling *Sweet-John! John to whit! sweet John to whit!* After July the

¹ The Jamaican bird is *V. calidris*, not *barbatulus*. In all probability, however, they do not differ in habits and notes. — R. R.

notes change to *to-whit-to-who*, and sometimes to a soft, simple chirp, whispered so gently as scarcely to be audible. The name of Whip-tom-kelly Mr. Gosse never heard applied to it in Jamaica. Yet it is a bird often heard, and one whose notes have a similarity to articulate sounds, and naturally suggest a common appellation. It is very vociferous and pertinacious in its calls, repeating them with energy every two or three seconds.

This species, he states, does not ordinarily sit on a prominent twig, or dart out after insects, though it has been seen in eager pursuit of a butterfly. It seems to live in the centre of thick woods. It does not pass the winter in Jamaica, but leaves at the beginning of October, returning as early as the 20th of March. Its food he states to be both animal and vegetable, as he found in its stomach the seeds of the tropical plants and berries. In April, Mr. Gosse observed it hunting insects by the borders of the Bluefields River, and so intent upon its occupation as to allow of a very near approach. It sought insects among the grass and low herbage, perching on the stalks of weeds, and darting out after both vagrant and stationary prey. They incubate in June and July.

Like all this genus the Long-billed Vireo builds a pensile nest of great architectural ingenuity and beauty. It is a deep cup, usually about two thirds of a sphere in shape, truncated at the top. The materials of which it is made are often somewhat coarse. Mr. Gosse describes it as about as large as an ordinary teacup, narrowed at the mouth, composed of dry grasses, silk, cotton, lichens, and spiders'-web. It is usually suspended from the fork of two twigs, the margin very neatly overwoven to embrace them. The materials are well interwoven, and the walls firm and close, though not very thick. The whole is smoothly lined with slender vegetable fibres resembling human hair. One nest had its cavity nearly filled with a mass of white cotton, interwoven with the other materials, which, being picked cotton, had evidently been taken from some yard or building.

The eggs of this species are three in number, of a brilliant white, delicately tinted with pink, and marked with a few fine red and red-brown spots, usually about the larger end.

An egg of the variety from Cuba is of an oblong-oval shape, slightly pointed at one end, and the markings of faint purple and of dark purplish-brown, in bold dashes, are all about the larger end. Another from the same locality is more distinctly rounded at one and pointed at the other end, and is marked with fine brown dots distributed over the whole egg. These eggs measure, one .825 by .55 of an inch, and the other .78 by .55. An egg from Jamaica is of an extremely oblong-oval, measuring .88 by .55 of an inch, and is boldly marked more or less over the entire egg with large blotches of purplish-brown.

The Messrs. Newton describe the nest of the *calidris* of St. Croix as a beautiful structure, shaped like an inverted cone, composed outwardly of dried blades of grass, dried leaves, and wool, woven round the twigs, to which it

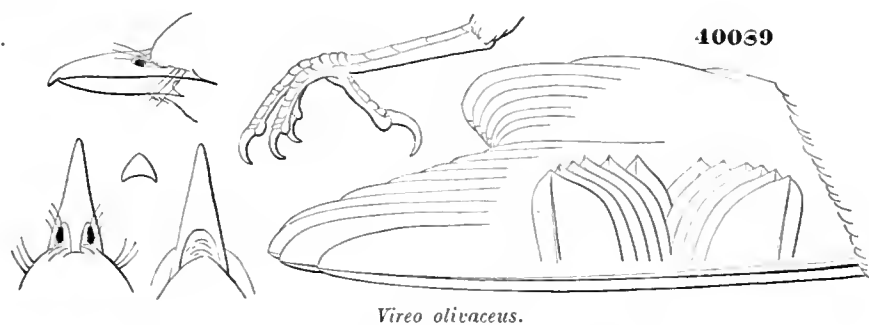
was attached with spiders'-webs, lined inside with finer blades of grass, and about three inches and a half in diameter, and five in height. The eggs, three in number, were white, with a few black spots, chiefly disposed about the larger end.

Vireosylvia olivaceus, BONAP.

RED-EYED GREENLET.

Muscicapa olivacea, LINN. Syst. Nat. I, 1766, 327 (based on EDWARDS, tab. 253, and CATESBY, pl. liv). — WILS. *Lanius olivaceus*, LICHT. Verz. 1823, 49 (N. Amer.). *Virco olivaceus*, VIEILL. ; BON. ; SWAINS. II. — AUD. — BAIRD, Birds N. Am. 1858, 331. — SAMUELS, Birds N. Eng. 270. *Vireosylvia oliv.* BON. Geog. Comp. List, 1838. — IB. Consp. 1850, 329. — REINHARDT, Vid. Med. f. 1853, 1854, 82 (Greenland). — IB. Ibis, III, 7. — SCLATER, P. Z. S. 1855, 151 (Bogota) ; 1859, 137, 363 (Xalapa). — A. & E. NEWTON, Ibis, 1859, 145. — SCLATER & SALVIN, Ibis, 1859, 12 (Guatemala). — LAWRENCE, Ann. N. Y. Lyc. VII, 1860, 246 (Cuba). — ? Ibis, 1864, 394 (Derby, Engl. May, 1859). — BAIRD, Rev. Am. B. 1864, 333. *Phyllomanes oliv.* CAB. Mus. Hein. 1850-51, 63. — IB. Jour. 1860, 404 (Costa Rica). — GUNDEL, Cab. Jour. 1861, 324 (Cuba ; very rare). ? *Virco virescens*, VIEILL. Ois. Am. Sept. I, 1807, 84, pl. liii (Penna.). — ? GRAY, Genera, I, 267, pl. lxxv. *Virco bogotensis*, BRYANT, Pr. Bost. Soc. VII, 1860, 227 (Bogota). — LAWRENCE, Ann. N. Y. Lyc. 1863 (Birds Panama, IV, No. 378).

SP. CHAR. (No. 1,418 ♂, Carlisle, Penn., May, 1844.) Upper parts olive-green. Top of head, from bill to nape, ash-color. A white line from nostrils above and beyond the eye, bordered above by a dusky line forming the edge of the ashy cap, and below by a similar, perhaps paler, loreal and post-ocular cheek-stripe. Beneath, including tibiae, white, with perhaps a tinge of olivaceous-ash across the breast ; the sides of the neck like the



back ; sides of the body with a faint wash of olive. Axillars and crissum faintly tinged with sulphur-yellow ; lining of wings and its edge, the latter especially, nearly white. Quills blackish-brown, edged externally, except at ends of primaries, with olive, internally with white. Tail-feathers lighter brown, edged externally like the back, internally with pale olivaceous-white. Bill dusky above, pale below ; tarsi plumbeous ; iris red. Length, 6.33 ; extent of wings, 10.25 ; wing, 3.33 ; tail, 2.50.

Female similar, but duller in plumage.

HAB. Whole of Eastern North America (Greenland, Halifax, Fort Simpson), west to base of Rocky Mountains, reaching Fort Bridger, and still farther northward to Bitterroot Mountains and Kootenay ; south to Panama and Bogota, in winter (Xalapa only in Mexico) ; very rare in Cuba (only West Indian locality). Accidental in England. Trinidad. (FINSCH.)

HABITS. The common Red-eyed Vireo is an abundant species throughout Eastern North America, from Florida to Nova Scotia on the northeast, to Lake Winnipeg on the northwest, and as far west as the Rocky Mountains. It apparently breeds wherever found, and in especial abundance in the Central States. It is a familiar and fearless species, often found, like the Warbling



Vireo olivaceus.

Vireo, in the very midst of crowded cities, and making its lively and pleasant notes heard in their public squares and private gardens, amid the ruder sounds of the neighboring streets. It breeds in Texas and Louisiana, at the Southwest, and also in abundance, at least as far as Halifax, in the opposite direction. At Fort Resolution, at the Cumberland House, and at Fort Simpson, the nests and eggs of this species were procured by Kennicott and Ross. A single specimen of the bird has been procured in Greenland, and another

accidental specimen was shot in England. Specimens have also been procured in Central America.

This Vireo, like all of its peculiar and well-marked genus, prefers the forests or the tops of large and shady trees, obtains its food usually among their upper branches, and very rarely approaches the ground. It is not exclusively sylvan, as at times it may be found around dwellings, hunting for insects and spiders; and although it hunts for food among the tree-tops, its nest is not always in such high situations, often not more than four or five feet from the ground.

In their migrations these birds enter the United States early in March, but do not make their appearance in Pennsylvania until the last of April, or in New England until the middle of May.

The Vireos procure their food, for the most part, by moving about and along branches, and among the twigs of trees, hopping from one position to another, and securing their prey without the click of a Flycatcher. The insects they capture are usually not in motion, though occasionally they will take them on the wing. They also feed on several kinds of ripe berries in the autumn.

The song of this Vireo is loud, musical, simple, and pleasing. It is uttered in short, emphatic bars, and at times has a very marked resemblance to the melodious chant of the Robin, though without its volume and power. This Vireo is one of the earliest of our spring musicians, as it is also one of the most constant and untiring in its song, continuing to sing long after most of the other vocalists have become silent, and even until it is about to leave us, at the close of September. The tender and pathetic utterances of this Vireo, uttered with so much apparent animation, to judge from their sound,

are in striking contrast to the apparent indifference or unconsciousness of the little vocalist who, while thus delighting the ear of the listener, seems to be all the while chiefly bent on procuring its daily supply of food, which it pursues with unabated ardor.

This Vireo builds the neat pensile nest of its race, suspending it from the fork of two or more twigs of a forest tree, at various heights of from five to fifty feet from the ground. It is cup-like in shape, and always dependent from small twigs, around which its upper edges are firmly bound. Externally it is woven of various materials, fine strips of bark, the hempen fibres of vegetables, and webs of spiders and of various caterpillars. These are compactly pressed and woven, and, as some suppose, agglutinated by the saliva of the builder. Sometimes the unmanageable materials give to the outside of the nest a rude and unfinished appearance, at others they are evenly and smoothly wrought. They are very strong, uninjured by the storms of winter, and are often made use of by other birds, by mice, and even by the same bird a second season.

A nest of this bird (S. I. Coll., 3,353) was obtained at the Cumberland House by Mr. Kennicott. It is pensile, like all others, but is composed almost exclusively of pine-needles, — a dry and hard material, difficult of management in making such a nest. With these are intermingled a few bits of moss, fine strips of bark, and flax-like vegetable fibres. Within this rude basket is an inner nest, made up of fine dry grasses, strips of bark, and pine leaves. The external fabric is loosely put together, — an unusual feature, — but the inner portion, in the firmness and strength with which it was made, is in remarkable contrast.

The Red-eyed Vireo's nest is often chosen by the Cowbird for the deposition of her parasitic eggs, and these foster-parents are singularly devoted in the care of their alien guests, whom they tenderly nurture, even to the neglect of their own offspring. In one instance three eggs of a Cowbird were deposited in the nest of the Vireo before any of her own, and, without laying any, the female Vireo proceeded to sit upon and hatch the intruders. In another case, where two of the Vireo's had been laid, two Cowbird's eggs were added. The Vireo stopped laying, and proceeded to incubate. In each instance the female Vireo seemed to forego her own natural aspirations, and at once conform to the new situation.

The male Vireo often evinces great courage and spirit in the defence of his nest, when the young are hatched driving away intruders, and even flying in the face of a man who approaches too near.

Mr. Nuttall states that the young of the Red-eyed Vireo feed eagerly upon the berries of the cornel and the *Viburnum dentatum*, and other shrubs. A young bird kept in confinement soon became very gentle, and readily ate flies and grasshoppers from his hand, and viburnum berries. A tame Kingbird in the same room was very jealous of and tyrannized over him, so as to compel him to seek protection from his captor. The Vireos, like Flycatchers,

have the power to regurgitate by the bill pellets of indigestible portions of their food.

The eggs of this Vireo vary greatly in size, according to the locality; the farther south the smaller they are found. One, marked on the shell East Tennessee, June 1, 1858, Alex. Gerhardt, measures .78 by .52 of an inch, while one from Halifax, Nova Scotia, measures .95 by .65. The ground-color of all is a clear crystal-white, and they are marked chiefly at the larger end with spots and finer dots of red-brown.

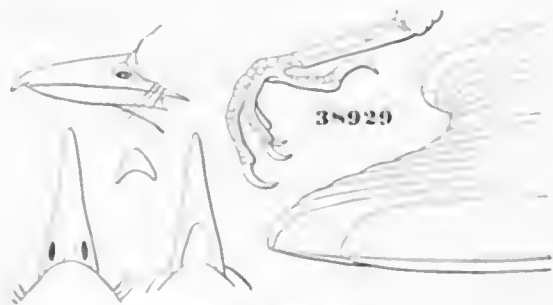
Mr. Robert Kennicott, in his notes, speaks of finding a nest of the Red-eyed Vireo at the Cumberland House, Saskatchewan, June 28. Incubation had not yet commenced. The pensile and neatly built nest was suspended about four feet from the ground, upon a hazel-bush. The parent, when scared from it, remained near until she was killed.

Vireosylvia flavoviridis, CASSIN.

YELLOW-GREEN VIREO.

Vireosylvia flav. CASSIN, PR. A. N. S. V, Feb. 1851, 152. — *Id.* VI. pl. ii (Panama). — SCLATER, P. Z. S. 1856, 298 (Cordoba). — *Id.* 1859, 375 (Oaxaca; April). — *Id.* Catal. 1861, 41, no. 264. — SCLATER & SALVIN, *Ibis*, 1, 1859, 12 (Guatemala). — BAIRD, *Rev.* 336. *Vireo flav.* BAIRD, *Birds N. Am.* 1858, 332. *Phyllomanes flav.* CAB. *Jour.* 1861, 93 (Costa Rica).

SP. CHAR. (No. 3,976 ♂.) Above olive-green; the whole top of head and nape ash-color, the edges of this cap and a loreal line dusky, but not very decidedly so. A grayish-white line from nostrils over the eye. Beneath white, the sides of the neck, breast, and body bright olivaceous-yellow; the axillars and crissum rich sulphur-yellow. On the breast the yellow extends almost to the median line, the color of opposite sides separated by a narrow interval. Quills dusky-brown; margined externally, except at ends of primaries, with olive-green, internally with grayish-white of a decided yellow shade. Tail-feathers dark olivaceous-brown, bright olive externally, internally olivaceous-yellow. Iris yellow or "red."



Vireo flavoviridis.

Bill horn-color, paler below. Legs plumbeous. Wings long and pointed. Second and third quills nearly equal; fourth a little less; first about intermediate between fourth and fifth. Total length, 6.00; wing, 3.20; tail, 2.60.

HAB. From northern border of Mexico to Isthmus of Panama, especially on west side.

This species has not yet been recorded as taken within the limits of the United States, but it comes so near to our southern border that it doubtless sometimes crosses the line. Nothing distinctive appears to be known of its habits.

Vireosylvia philadelphicus, CASSIN.**PHILADELPHIA GREENLET.**

Vireosylvia philadelphica, CASSIN, Pr. A. N. Sc. V, Feb. 1857, 153. — IB. VI, pl. i, fig. 1 (Philadelphia). — SCLATER & SALVIN, Ibis, I, 1859, 12 (Guatemala). — BAIRD, Rev. Am. Birds, 340. *Virco philadelphicus*, BAIRD, Birds N. Am. 1858, 335, pl. lxxviii, fig. 3. *Vireosylvia cobanensis*, SCLATER, P. Z. S. 1860, 463 (Coban). — IB. Ann. Mag. N. H. 1861, 328.

SP. CHAR. (No. 20,643 ♂.) Above dark olive-green, tinged with plumbeous-ash except on the rump; top of head and nape purer plumbeous-ash, not edged with dusky, the line of demarcation indistinct. Beneath light sulphur-yellow, paler and almost white on chin and middle of abdomen; sides more olivaceous. A whitish stripe from bill over eye, as also a patch beneath it and the eyelids. A dusky loreal and post-ocular spot. Quills and rectrices brown, edged externally with olive, internally with whitish; the larger coverts with paler outer edges. Bill blackish, paler plumbeous below. Legs plumbeous. Spurious outer or first quill (seen in *gilva*) wanting; the outer about equal to fifth; third longest; second and fourth not much shorter. Total length, 4.80; wing, 2.65; tail, 2.25.



V. philadelphicus.

HAB. Eastern North America to Hudson's Bay and Maine, south (in winter) to Costa Rica and Guatemala. Veragua (SALVIN). Not recorded from Mexico or West Indies.

Specimens vary somewhat in purity of tints, and especially in intensity of yellow of under parts, which color is deeper in autumnal skins.

Specimens from Costa Rica and Guatemala, being merely winter visitors to that region, are quite identical with North American examples.

HABITS. This but little known species was first described by Mr. Cassin, in 1851, from a specimen shot by him in some woods near Philadelphia nine years previously, which was then unique, and remained so for some time after. This fact, and its resemblance to *V. gilva*, led to the impression that it might be only a variety of that species. Since the publication of the description other specimens have been procured from different localities, — Moose Factory, Maine, Ohio, Wisconsin, Costa Rica, and Guatemala. But little is as yet known in regard to its habits or its distribution. It is quite abundant in the spring in Southern Wisconsin, where it appears only as a migrant passing north, none remaining to breed. As it makes its appearance late in May, and usually passes rapidly on, it seems natural to infer that it cannot be far from its breeding-place at the period of its appearance. The specimen obtained by Mr. Cassin was shot in September, on its southward journey. It was in the upper branches of a high tree, capturing insects; and his attention was drawn to it by its slow and deliberate movements.

Mr. Thure Kumlien, of Dane County, Wis., informs me that he has been familiar with this Vireo since 1849, and has collected it every year since

that period, finding it both in the spring and fall. It appears occasionally as early as the 10th of May, the time varying with the season from the 10th to the 27th. In 1857, when the season was very backward and May very cold, they did not arrive until June 2. They were unusually numerous, and remained only a day or two. So far as he has been able to ascertain, none stop to breed. They are very quiet, have no song at the time they are passing, and seem only intent on collecting their food and in proceeding on their way. They are very tame and unsuspecting, and one can readily get to within a few feet of them. In the fall they are returning south from the 7th to the 19th of September.

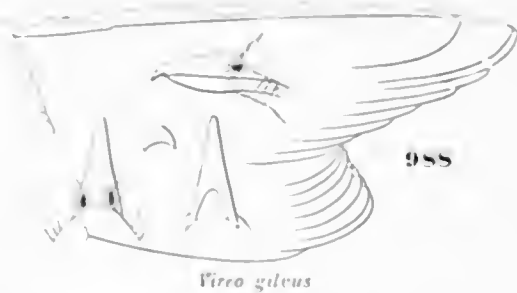
The nest and eggs remain to be obtained.

Vireosylva gilvus, CASSIN.

WARBLING GREENLET.

Muscicapa gilva, VIEILL. Ois. I. 1807, 65, pl. xxxiv. *Vireo gilvus*, BON. Obs. Wils. 1825, no. 123. — AUD. Orn. Biog. II, pl. cxviii. — IR. Birds Am. IV, pl. cexli. — BAIRD, Birds N. Am. 1858, 335. — SAMPFELS, Birds N. Eng. 273. *Vireosylva gilva*, CASSIN, Pr. A. N. Sc. 1851, 153. — SCLATER, P. Z. S. 1856, 298 (Cordova); (!) 1858, 302 (Oaxaca; June) (perhaps *V. swainsoni*). — BAIRD, Rev. Am. B. 342. *Muscicapa melodia*, WILS. Am. Orn. V, 1812, 85, pl. xlii, fig. 2.

SP. CHAR. (No. 1,017 ♀.) Above olive-green, strongly glossed with ashy; the head and nape above more distinctly ashy, but without decided line of demarcation behind, and



without dusky edge; rump pure olive. Stripe from nostrils over eye to nape, eyelids, and space below eye, creamy-white. A rather dusky post-ocular and loreal spot, the latter not extending to the bill. Under parts white, with tinge of greenish-yellow (occasionally of creamy fulvous or buff), especially on breast; sides more olivaceous. Crissum and axillars scarcely more yellowish. Quills and rectrices wood-brown, edged internally with whitish, externally with olivaceous, except perhaps on longer primaries. Edge of wing white. Larger wing-coverts grayish-brown, with paler edges, and no trace of olivaceous. Bill horn-color above, paler below.

First quill very short or spurious; second about equal to, generally rather longer than sixth; third longest; fourth, then fifth a little shorter.

Fresh specimen: Total length, 5.33; expanse of wings, 8.35; wing from carpal joint 2.85. Prepared specimen: Total length, 4.80; wing, 2.75; tail, 2.25. Sexes alike. Iris brown.

HAB. Eastern North America to Fort Simpson. Cordova and Oaxaca only southern localities recorded. Not West Indian.

A very young bird has a very cottony plumage, and differs in tints, having the top of the head and the nape a soft whitish isabella-color, this tingeing the back; the lower parts are wholly unsoiled white; the middle and sec-

ondary coverts are obscurely tipped with light brown, forming two indistinct bands across the wing.

A specimen (No. 54,262) from Orizaba is, in positively every respect, exactly intermediate between this species and *V. josephæ* of Costa Rica, Ecuador, etc. (See footnote on page 360.) The crown is brown, decidedly darker than, and different in tint from, the back, but less so than in *josephæ*; the back is less olive than in the latter, and less gray than in the former. The lower parts are more yellow than in *gilvus*, and less so than in *josephæ*, the superciliary stripe whiter and extending farther back than in the former, and less pure white and shorter than in the latter, etc.

HABITS. The Warbling Vireo has only a slightly less extended distribution than the Red-eyed, being found throughout all Eastern North America, as far north as Fort Simpson and Selkirk Settlement, and west to the Missouri River, and breeding as far south as Louisiana. It is stated by Audubon to be found on the Columbia River, but in this he probably referred to the Western race, *V. swainsoni*. That writer never observed this species in Louisiana or Kentucky, nor in the maritime part of Georgia, and its manner of entering the United States he was unable to ascertain. Where it moves to in the winter is also unknown, none having been met with in the West Indies, and only at a few points in Mexico, Cordova, Oaxaca, and the State of Vera Cruz. It was, however, found breeding at Calcasieu, Louisiana, by Mr. Würdemann.

It breeds abundantly from Virginia to Nova Scotia, and throughout the Northwestern States. West of the Rocky Mountains it is replaced by a closely allied species, the *V. swainsoni*. This Vireo, more than any other of its genus, if not exclusively, is to a large extent a resident of villages, towns, and even cities. It is by far the sweetest singer that ventures within their crowded streets and public squares, — although Mr. Cassin gives his preference to the notes of the Red-eyed, — and the melody of its song is exquisitely soft and beautiful. It is chiefly to be found among the tall trees, in the vicinity of dwellings, where it seems to delight to stay, and from their highest tops to suspend its pensile nest. It is especially abundant among the elms on Boston Common, where at almost any hour of the day, from early in the month of May until long after summer has gone, may be heard the prolonged notes of this, one of the sweetest and most constant of our singers. Its voice is not powerful, but its melody is flute-like and tender. Throughout the last of May, and in June and July, their charming song may be heard amid the din of the city from earliest dawn till nightfall, and rarely ceases even in the noontide heat, when all other birds are silent. It is ever in motion, while thus singing; and its sweetest notes are given forth as it moves among the tree-tops in search of insects. It is not only one of our most constant singers, but it remains musical almost until its departure for the South in October.

The Warbling Vireo appears in the Middle States about the 15th of April,

and reaches New England early in May. The path of its northern migrations, and of its return, is somewhat in doubt. It is abundant in winter, according to Sumichrast, about Orizaba, and probably enters Texas and passes north and east along the Mississippi and the Ohio Rivers. In certain portions of the country this species is evidently on the increase, becoming more and more common as the country is settled, and towns and villages spring up.

The Warbling Vireo builds its nest usually in more elevated positions than any others of this family. For the most part in the vicinity of dwellings, often over frequented streets, they suspend their elaborately woven and beautiful little basket-like nest, secure from intrusion from their human neighbors, and protected by the near presence of man from all their more dreaded enemies. Audubon narrates, in an interesting manner, the building of their nest by a pair of these birds on a poplar-tree, near his window, in Camden, N. J. It was suspended between the body of the tree and a branch coming out at an acute angle. The pair were at work, morning and evening, eight days, first attaching slender blades of grass to the knots on the branch and the bark of the trunk, and thence working downward and outward. They varied their materials, from time to time, until at last he traced them, after a prolonged absence, to a distant haystack, from which they brought fine, slender, dry grasses, with which they completed and lined their nest.

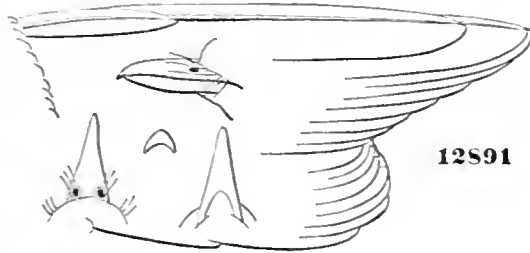
The nests of the Warbling Vireo, while they resemble closely those of the other species in all the characteristics of this well-marked family, are yet, as a rule, more carefully, neatly, and closely built. They are usually suspended at the height of from thirty to fifty feet, in the fork of twigs, under and near the extremity of the tree-top, often an elm, protected from the sun and storm by a canopy of leaves, and quite out of reach of most enemies. They vary little in size, being about two inches in height and three and a half in their greatest diameter, narrowing, toward their junction with the twigs, to two inches. They are all secured in a very firm manner to the twigs from which they are suspended by a felting of various materials, chiefly soft, flexible, flax-like strips of vegetable fibres, leaves, stems of plants, and strips of bark. With these are interwoven, and carried out around the outer portions of the nest, long strips of soft flexible bark of deciduous trees. They are softly and compactly filled in and lined with fine stems of plants.

The eggs are usually five in number, and, like those of all the Vireos, are of a brilliant crystal-white, sparingly spotted at the larger end with markings of dark brown, and others of a lighter shade. They are less marked with spots than usual in the genus, and are often entirely unspotted, and pure white. Occasionally, however, they are found with well-marked blotches of reddish-brown. They vary in length from .75 to .70 of an inch, and average about .55 in their breadth.

Vireosylva gilvus, var. swainsoni, BAIRD.**WESTERN WARBLING GREENLET.**

Vireo swainsoni, BAIRD, Birds N. Am. 1858, 336 (Pacific coast). — ELLIOT, Illust. Birds N. A. I, vii. *Vireosylva swainsoni*, BAIRD, Rev. Am. B. 343. *Vireosylva gilva*, var. *swainsoni*, COOPER, Orn. Cal. I, 1870, 116. *Vireo bartramii*, SWAINSON, F. B. A. II, 1831, 235 (in part; spec. from Columbia River?).

(No. 5,321 ♂.) Similar to *V. gilva*, but smaller; colors paler. Bill more depressed. Upper mandible almost black. Second quill much shorter than sixth. Total length, 4.75; wing, 2.71; tail, 2.35; difference between tenth quill and longest, .58; exposed portion of first primary, .58, of second, 1.82, of longest (measured from exposed base of first primary), 2.10; length of bill from forehead, .56, from nostril, .29, along gape, .65; depth of bill, .13; tarsus, .70; middle toe and claw, .56; hind toe and claw, .43.



HAB. United States, from Rocky Mountains to Pacific coast.

In the present bird the bill is darker in color, much smaller, and more depressed, the depth at the base being less than the width, instead of being equal to it as in var. *gilvus*. The wing is more rounded, the second quill much shorter than the sixth, generally shorter or but little longer than the seventh. In var. *gilvus*, the second quill is about equal to the sixth. The second quill is about .30 of an inch (or more) shorter than the longest in *swainsoni*, while in *gilvus* it is only about .20 shorter. The feet of *swainsoni* are weaker, and the colors generally paler and grayer. The iris, according to Coes, is dark brown.

Young birds in autumnal plumage have the crown decidedly ash, the sides more greenish; the wing-coverts pass terminally into a light brownish tint, producing an inconspicuous band.

HABITS. This Western representative of the Warbling Vireo is found throughout the western portions of our Union, from the Great Plains to the Pacific, and from Arizona to the extreme northern boundary of Washington Territory.

Dr. Cooper characterizes this as a lively and familiar songster. It arrives, he states, at San Diego about April 10, and reaches Puget Sound toward the middle of May, occupying nearly all the intermediate country throughout the summer. It frequents the deciduous trees along the borders of streams and prairies, coming into gardens and orchards with familiar confidence, wherever cultivation has reclaimed the wilderness. Like its Eastern prototype, its cheerful and varied song is heard all day long until quite late in the autumn. They too build their nests in the shade-trees of the parks of busy cities, singing ever their delightful strains, unconscious of the busy and noisy crowd that throngs the neighboring streets.

Dr. Cooper states that its nests are pendent from the forks of a branch high above the ground, sometimes to the height of a hundred feet.

Mr. Ridgway, who observed the habits of this species in Utah and Nevada, speaks of it as the characteristic Vireo of the West. It was found by him in all the fertile localities, and was one of the most common birds in the wooded regions. He found it very generally distributed through the summer, inhabiting the copses along the streams of the mountain cañons, and the open groves of the parks, as well as the cottonwoods and willows of the river valleys. In the fall the berries of a species of the cornel that grows along the mountain streams constitute its principal food. Its notes and manners are identical with those of the Eastern species.

The nests of this species are not distinguishable, except in the necessarily varying materials, from those of the Eastern birds. In position, size, and shape they are the same. The eggs, four or five in number, are white, spotted with brown and reddish-brown, and measure .78 by .58 of an inch. The spots are somewhat darker than those of the *V. gilvus*, and the shape more of an oblong-oval, in all that I have seen. But this difference may disappear in the examination of a larger number.

A nest found by Mr. Ridgway near Fort Churchill, Nevada, June 24, was suspended from the extremity of a twig of a sapling of the cottonwood, in a copse of the same growing in a river-bottom. It has a height of two and a half inches, and a diameter of three. It is composed externally of an elaborate interweaving of spiders' webs, willow and cottonwood down, and strong cord-like strips of fine inner bark. These are strongly bound around the twigs from which the nest is suspended. It is one of the most elaborately interwoven, homogeneous, and well-felted nests of this bird I have ever met with. Another nest, from Parley's Park, Utah, obtained June 28, differs in having the external portion woven almost exclusively of fine strips of bleached bark, and is lined with fine wiry grasses. In each of these the eggs were four in number, all oblong-oval in shape, but much more pointed at one end in the latter nest.

This species was found breeding in Napa Valley, Cal., by Mr. A. J. Grayson, and at Fort Tejon by Mr. Xantus.

SUBGENUS **LANIVIREO**, BAIRD.

CHAR. Body stout, head broad. Bill short and stout, broad at the base, the culmen curved from the base, the commissure considerably arched. Bill blue-black. Feet stout. Type, *V. flavifrons*. For figure, see page 379.

Species and Varieties.

COMMON CHARACTERS. A broad stripe from bill to and around, but not beyond, the eye. Two broad white bands across the wings. Bill plumbeous-blue, black toward culmen. Iris brown in all species?

1. *L. solitarius*. Spurious primary exposed. Throat and orbital ring white.

a. Spurious primary well developed, — .60 or more long, .10 broad.

Nape and side of neck plumbeous; upper tail-coverts olive-green. Crissum tinged with yellow, but none on side of throat, nor across breast. Wing, 3.05; tail, 2.40; bill, from nostril, .27; tarsus, .66. *Hab.* Eastern Province of United States, straggling westward to the Pacific Coast, especially in its migration southward into Mexico, where it penetrates in winter as far as Guatemala var. *solitarius*.

Above continuous olive-brown; below ochraceous-white, with a buffy tinge across breast, and deeply olivaceous along sides. Crissum tinged with yellow. Wing, 2.80; tail, 2.15; bill, .30; tarsus, .66. *Hab.* Pacific Province of United States, straggling in autumn eastward into the Middle Province var. *cassini*.

Above continuous ashy-plumbeous. Beneath pure white, ashy along sides, and very slightly so across breast. Wing, 3.25; tail, 2.50; bill, .30; tarsus, .66. *Hab.* Middle Province of United States, south, in winter, through Western Mexico to Colima var. *plumbeus*.

b. Spurious primary very minute, — about .30 long by .04 wide.

Nape and side of neck olive-green; upper tail-coverts plumbeous. Crissum not tinged with yellow, but sides of the throat and across the breast are. Wing, 3.10; tail, 2.20; bill, .29; tarsus, .64. *Hab.* Coban, Vera Cruz, Guatemala; resident? var. *propinquus*¹

2. *L. flavifrons*. Spurious primary concealed. Throat and orbital ring yellow.

Anterior half of body olive-green above, lemon-yellow below; posterior half plumbeous-ash above, white below. Wing, 3.00; tail, 1.90; bill, .32; tarsus, .70. *Hab.* Eastern Province of United States, south, in winter, to Costa Rica, and very rare in Cuba.

Lanivireo solitarius, BAIRD.**BLUE-HEADED VIREO.**

Muscicapa solitaria, WILS. Am. Orn. II, 1810, 143, pl. xvii, fig. 6. *Vireo solitarius*, VIEILL. — AUD. I. — CASSIN, Sc. — SCLATER, P. Z. S. 1856, 298 (Cordova); 1859, 363 (Xalapa); 375 (Oaxaca?). — SCLATER & SALVIN, Ibis, 1860, 31 (Guatemala). — CAB. Jour. III, 468 (Cuba). — GUNDLACH, Cab. Jour. 1861, 324 (Cuba; very rare). — SAMUELS, Birds N. Eng. 277. *Vireo (Lanivireo) sol.* BAIRD, Birds N. Am. 1858, 329. *Vircosylvia (Lanivireo) solitaria*, BAIRD, Rev. Am. B. 1864, 347.

SP. CHAR. (No. 300 ♂.) Above olive-green, including upper tail-coverts; the top and sides of head and nape ashy-plumbeous; sides of the neck plumbeous-olive. Broad line from nostrils to and around eye, involving the whole lower eyelid, white. A loreal line

¹ *Vircosylvia propinqua*, BAIRD, Rev. 1865, p. 348. This appears to be merely a permanent resident race of *solitarius*, which itself visits Guatemala only in winter. Closely resembling the latter, it differs essentially in the respects pointed out above. The difference in coloration is produced by a shifting, as it were, toward the head of the yellow and olive, leaving the upper tail-coverts clear ash, and the lower pure white, and encroaching upon the ash anteriorly to the crown and ear-coverts, and the white alongside of the throat. In the *V. plumbeus* these tints are simply almost entirely removed, leaving clear ash and pure white, with a tinge, however, of olive on the rump and of yellow on the sides. In *V. cassini* the tints are darkened and browned by the peculiar influence of the region where found, there being neither clear ash, nor olive-green, nor pure yellow or white, in the plumage.

involving the edge of the eyelid, and a space beneath the eye, dusky plumbeous. Beneath white; the sides yellow, overlaid with olive, this color not extending anterior to the



Lanius solitarius.

breast. Axillars and base of crissum pale sulphur-yellow, the long feathers of the latter much paler or nearly white. Wings with two bands and outer edges of innermost secondaries olivaceous-white; the quills dark brown, edged externally with olive-green, internally with white; tail-feathers similarly marked, except that the

lateral feather is edged externally also with white, the central without internal border. Bill and legs blackish-plumbeous. Iris brown.

First quill spurious, rather more than one fifth the second, which is intermediate between the fifth and sixth; third longest.

Fresh specimen: Total length, 5.40; expanse of wing, 9.00. Prepared specimen: Total length, 5.25; wing, 2.95; tail, 2.35.

HAB. United States, from Atlantic to Pacific; Cape St. Lucas. Not recorded from Southern Rocky Mountains, where replaced by *L. plumbeus*. South to Mexico and Guatemala. Vera Cruz (winter, SUMICHRAST). Very rare in Cuba.

Spring specimens show sometimes a gloss of plumbeous on the back, obscuring the olive, the contrast of colors being greater in the autumnal and young birds. Sometimes the crissum appears nearly white. The length of the spurious primary varies considerably, from .45 to .75 of an inch.

In autumn the colors are similar, but slightly duller and less sharply defined, while the back is considerably tinged with ashy.

HABITS. The Solitary Vireo appears to be found, irregularly, throughout the United States. Nowhere abundant, so far as I am aware, it seems to be more common in California than on the Atlantic, while there are also large tracks of intervening territory in which we have no knowledge of its presence. On the Atlantic it has been met with from Georgia to the Bay of Fundy. In Massachusetts it has been found in a few restricted localities; in one or two of them, they are as abundant as the White-eyed. Mr. Dresser found it in Texas, near San Antonio, late in the autumn, and early in spring, but none remained to breed. Mr. Boardman gives them as a summer visitant at Calais, but not common, and Professor Verrill makes a similar statement for Western Maine, where it arrives in the second week of May. According to Mr. Allen, it reaches Western Massachusetts by May 1, but it is there quite rare. A few are presumed to stop and breed.

In California, Mr. Gambel states that it is quite abundant in the latter part of summer, and throughout the winter, frequenting low bushes and thickets. Dr. Heermann also frequently met with it. Both at the East and the West it is undoubtedly only migratory to about the 40th parallel, and does not, except in mountainous localities, breed south of that line. Professor Baird found it breeding in the South Mountains, near Carlisle, Penn., in May, 1844. It occurs in Guatemala in the winter.

Dr. Cooper states that it reaches Puget Sound by the first of May, and he has also observed it in the Colorado Valley, after the 14th, where they made themselves conspicuous by their song, but in a few days had all passed northward. He has met them nesting in May at the eastern base of the Coast Range, and has also found them quite common, in summer, on the Columbia River. Their favorite resorts are the deciduous oaks.

These birds were found breeding at Fort Tejon by Mr. Xantus, and at Vancouver by Mr. Hepburn.

Mr. Ridgway met with a few in September, in the thickets along the streams flowing from the Clover Mountains.

This species was taken in winter by Mr. Boucard, at Talew, in the State of Oaxaca, Mexico.

Mr. Audubon's statement that this bird is rather abundant, and that it breeds in Louisiana, is undoubtedly incorrect, and his description of its nest and eggs belongs rather to the Yellow-throated, and agrees with none that I have ever seen of this species. That he found them abundant in Maine, and traced them as far north as Pictou, Nova Scotia, is more probable. Dr. Bachman speaks of this species becoming each year more abundant in South Carolina, coming in February and remaining through March.

Mr. Nuttall, who met with this species on the Columbia, about the beginning of May, describes its song as a plaintive, deliberate warble, intermediate between the song of the *olivaceus* and the *flavifrons*. Mr. Burroughs describes the love-notes of these birds as being inexpressibly sweet and tender in both sexes. The song of the male, as I have heard it, bears no resemblance to that of any other Vireo. It is a prolonged and very peculiar ditty, repeated at frequent intervals and always identical. It begins with a lively and pleasant warble, of a gradually ascending scale, which at a certain pitch suddenly breaks down into a falsetto note. The song then rises again in a single high note, and ceases. For several summers the same bird has been heard, near my house in Hingham, in a wild pasture, on the edge of a wood, always singing the same singular refrain, during the month of June.

Mr. Nuttall found a nest of this species suspended from the forked twig of a wild crab-tree, about ten feet from the ground. The chief materials were dead and withered grasses, with some cobwebs agglutinated together, externally partially covered with a few shreds of hypnum, assimilating it to the branch on which it hung, intermingled with a few white paper-like capsules of the spiders' nests, and lined with a few blades of grass and slender root-fibres.

Seven nests of this species, found in Lynn and Hingham, Mass., exhibit peculiarities of structure substantially identical. In comparison with the nests of other Vireos, they are all loosely constructed, and seem to be not so securely fastened to the twigs, from which they are suspended. One of these nests, typical of the general character, obtained in Lynn, May 27, 1859, by Mr. George O. Welch, was suspended from the branches of a young oak,

about twelve feet from the ground. The external depth of this nest was only two and a half inches, the diameter three and a quarter, and its cavity one and three quarters inches deep, and two inches wide at the rim. It was constructed externally of strips of yellow and of gray birch-bark, intermingled with bits of wool and dry grasses. The external portion was quite loosely put together, but was lined, in a more compact manner, with dry leaves of the white pine, arranged in layers. Another nest, found in Hingham, was but two feet from the ground, on a branch of a hickory sapling. In its general structure it was the same, only differing in shape, being made to conform to its position, and being twice as long as it was broad. It contained four young, when found, about the 10th of June. One nest alone, built on a bush in Lynn, exhibits even an average degree of compactness in its external structure. This is largely composed of cocoons, which are woven together into a somewhat homogeneous and cloth-like substance. Within, decayed stems of grasses take the place of the usual pine-needles.

In the summer of 1870 a pair built their nest in a dwarf pear-tree, within a few rods of my house. They were at first very shy and would not permit themselves to be seen at their work, and suspended all labor when any one was occupied near their chosen tree. Soon after the construction of the nest two Cowbird's eggs were deposited, which I removed, although the female only laid two of her own before she began to sit upon them. By this time she became more familiar, and would not leave her nest unless I attempted to lay hands upon her. She made no complaints in the manner of the White-eyed, nor sought to attack like the Yellow-throated, but kept within a few feet, and watched me with eager eyes, until I left her. Unfortunately, her nest was pillaged by a Black-billed Cuckoo, and I was unable to observe her feed her young, as I had hoped to do.

The eggs are of an oblong-oval shape, moderately pointed at one end, and of a white ground, less crystalline than in the other species of its kind. They are spotted pretty uniformly over the entire egg with dots of dark red and reddish-brown. They are usually five in number.

***Lanivireo solitarius*, var. *cassini*, BAIRD.**

CASSIN'S VIREO.

Vireo cassini, XANTUS, PR. A. N. S. Phil. May, 1858, 117. — BAIRD, Birds N. Am. 1858, 340, pl. lxxviii, fig. 1; Review Am. B. I, 1865, 347 (sub *V. solitaria*), RIDGWAY.

SP. CHAR. Third and fourth quills nearly equal, fifth shorter, second longer than seventh. Spurious primary very narrow, falcate, acute; less than one third the second quill, and a little more than one fourth the third. Above, including edges of wing and tail-feathers, clear olive-green, becoming dusky ashy on the top and sides of head. Beneath fulvous-white, tinged with ill-defined olive-green on the sides (scarcely on the crissum). Two broad bands on the wing-coverts and the outer edges of the innermost secondaries greenish-white; the outer edge of outer tail-feather, with a broad ring round

the eye, extending to a frontal band, dull white. Length about 5 inches; wing, 2.75; tail, 2.30.

HAB. Fort Tejon, Cal. (XANTUS); West Humboldt Mountains, Nevada (RIDGWAY).

Since the type of this variety was obtained, two other specimens (Nos. 53,418 ♀, and 53,419 ♂, September, 1867; R. Ridgway) have been secured by the United States Geological Survey of the 40th Parallel, in command of Mr. Clarence King, in the West Humboldt Mountains, Nevada. These specimens are even more different from true *solitarius* than is the type of this race, showing that it is really distinct, as a variety. In the same thickets at the same season, perfectly typical specimens of *V. solitarius* were obtained: the latter having, no doubt, come from their more northern summer home on their passage southward into Mexico.

In the Humboldt Mountain specimens the crown shows no trace of ash, and is even darker and more brownish than the back. In fact, the relation of the *V. cassini* to *V. solitaria* is an almost exact parallel to that of *V. josephæ* to *V. gilvus*, as far as coloration is concerned, in each case the extreme being widely different, but connected by specimens showing intermediate characters.

Nothing is known of the habits of this race.

Lanivireo solitarius, var. plumbeus, COUES.

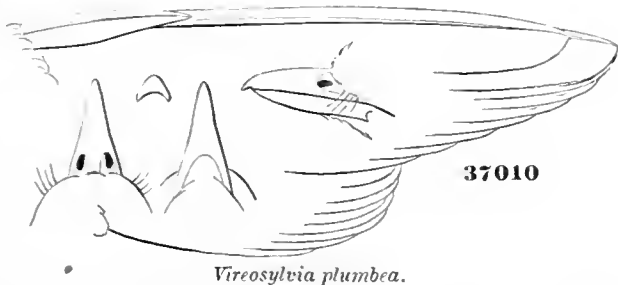
LEAD-COLORED VIREO.

Vireosylva plumbea, COUES, Pr. A. N. Sc. Phila. 1866 (Fort Whipple, near Prescott, Arizona). — COOPER, Orn. Cal. 1, 1870, 119. — ELLIOT, Illust. Birds N. A. 1, vii. *V. (Lanivireo) plumbea*, BAIRD, Rev. 349.

SP. CHAR. (No. 37,011.) Whole upper parts and sides of head uniform plumbeous; the lower part of the back with a faint wash of olivaceous. A white line from bill to and around eye; a dusky line from corner of eye to bill. Sides of breast and flanks plumbeous, paler than the back; the flanks very slightly tinged with olive-green. Rest of under parts white; the axillars ashy, edged with white. Wings above with two conspicuous white bands; the innermost quills edged externally and the longer ones internally with white, the latter edged externally with light ash. Bill and legs dark plumbeous. "Iris hazel." Tail-feathers narrowly edged all round with white, narrowest internally, and increasing from central to lateral feathers. Upper tail-coverts clear ash.

As the specimen in finest plumage (described above) is moulting the quills, the measurements are taken from another (37,010). In this the first quill is not quite one third the second, which equals the sixth, the third and fourth longest.

(No. 37,010.) Fresh specimen: Total length, 6.10; expanse of wings, 10.80. Prepared specimen: Total length, 5.75; wing, 3.25; tail, 2.70; difference between tenth and longest quill, .95; exposed portion of first primary, .75, of second, 2.34, of lon-



Vireosylva plumbea.

gest, third (measured from exposed base of first primary). 2.54; length of bill from forehead, .55, from nostril, .31, along gape, .70; tarsus, .75; middle toe and claw, .60, claw alone, .21; hind toe and claw, .50, claw alone, .23.

HAB. Southern Rocky Mountains; East Humboldt Mountains, Nevada (Ridgway). In winter to Colima, Mexico.

While the pattern of coloration is precisely similar to that of *Lunivireo solitarius*, the difference in the colors appears to be occasioned merely by removing, as it were, the yellow stain, which on the plumbeous produces the olive-green tinge, and exists in a purer tint along the sides, leaving, essentially, only clear plumbeous and pure white; there is, however, in the most typical specimens, always a faint tinge of green on the rump, and a stain of yellow along the side. Though identical with *solitarius* in most of its proportions, the wings and tail are considerably longer than in the average of that form.

There are many specimens from the Rocky Mountains and westward that are so decidedly intermediate between *solitarius* and *plumbeus*, that, considering also the lack of essential difference in form and coloration between the two, we do not hesitate to consider them, along with *cassini* and *propinquus* (see page 373), as races of a single species, of which each is the representative in a particular region. Thus, *V. solitarius* breeds in the Eastern Province of the United States (and possibly in the Western, following the same route far to the northward that many Eastern birds pursue in straggling westward), and migrates in winter into Middle America as far as Guatemala; those which breed in the Northwest pass directly southward, thus crossing the region where *cassini* and *plumbeus* breed, which accounts for their being obtained together. *V. cassini* is the representative on the opposite side of the continent; but the history of its migrations is yet obscure. *V. plumbeus* is the Middle Province and Rocky Mountain representative, breeding alone in that region, and in winter migrating southward through Western Mexico as far as Colima. *V. propinquus* is another permanent race, but a local one, being resident in the country where found, though mixed in winter with visitors of *solitarius* from the North.

HABITS. Of this very recently discovered race, very little is at present known. It was first described by Dr. Cones, who met with it in Arizona, near Fort Whipple. He says it is especially abundant in the northern part of that Territory. It was by far the most common Vireo at Fort Whipple, where it is a summer resident, arriving there about the 15th of April and remaining until October.

It was found to be common about Laramie Peak, by Dr. R. Hitz, and was also met with in winter on the plains at Colima, Mexico, by Xantus.

It was seen in the summers of 1868 and 1869, by Mr. Ridgway, among the cedar and nut-pine woods on the slopes and among the brushwood in the cañons of the East Humboldt Mountains, being most partial to the former situations. There, too, it undoubtedly breeds, as in the latter part of July young birds, unable to fly, were met with by him. He also states that the

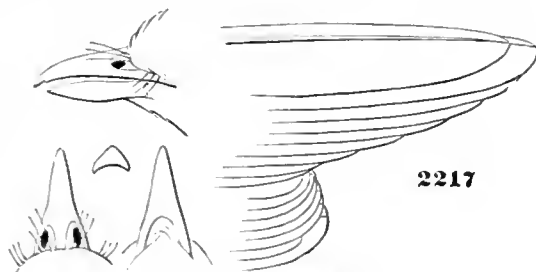
common notes of this Vireo very closely resemble those of the Western Wood Wren (*Troglodytes parkmanni*).

Lanivireo flavifrons, BAIRD.

YELLOW-THROATED VIREO.

Vireo flavifrons, VIEILL. Ois. Am. Sept. I, 1807, 85, pl. liv. — AUD. Orn. Biog. II, 1834, pl. cxix. — IB. Birds. Am. IV, pl. cccxxviii. — CASSIN, Pr. A. N. Sc. 1851, 149. — SCLATER, P. Z. S. 1857, 227 (Vera Cruz); 1860, 257 (Orizaba). — SCLATER & SALVIN, Ibis, I, 1859, 12 (Guatemala). — CAB. Jour. III, 468 (Cuba; winter). — GUNDLACH, Cab. Jour. 1861, 324 (Cuba; rare). — CAB. Jour. 1860, 405 (Costa Rica). *Vireo (Lanivireo) flav.* BAIRD, Birds N. Am. 1858, 341. *Vireosylva (Lanivireo) flavifrons*, BAIRD, Rev. 346. *Muscicapa sylvicola*, WILS. Am. Orn. II, 1810, 117, pl. vii, f. 3.

SP. CHAR. (No. 28,390.) Head and neck above and on sides, with interscapular region, bright olive-green. Lower back, rump, tail, and wing-coverts ashy. Wings brown, with two white bands across the coverts, the outer edges of inner secondaries, and inner edges of all the quills, with inside of wing, white. Outer primaries edged with gray, the inner with olive. Tail-feathers brown, entirely encircled by a narrow edge of white. Under parts to middle of body, a line from nostrils over eye, eyelids, and patch beneath the eye (bordered behind by the olive of neck) bright gamboge-yellow; rest of under parts white, the flanks faintly glossed with ashy. Lores dusky. Bill and legs plumbeous-black.



Vireosylva flavifrons.

No spurious primary evident: second quill longest; first a little shorter than third.

Length, 5.80; wing, 3.00; tail, 2.00; difference of longest and innermost quills, .90; tarsus, .73.

HAB. Eastern United States, south to Costa Rica. Veragua (SALVIN). Very rare in Cuba.

Autumnal birds, perhaps more especially the young, are more glossed with olivaceous, which invades the ashy portions, and tinges the white.

HABITS. All the older ornithological writers, in speaking of the Yellow-throated Vireo, repeat each other in describing it as peculiarly attracted to the forest, seeking its solitudes and gleaning its food chiefly among its top-most branches. Such has not been my experience with this interesting and attractive little songster. I have found no one of this genus, not even the *gilva*, so common in the vicinity of dwellings, or more familiar and fearless in its intercourse with man. All of its nests that I have ever met with have been built in gardens and orchards, and in close proximity to dwellings, and they have also been exclusively in comparatively low positions. In one of the most recent instances a pair of these birds built one of their beautiful moss-covered nests in a low branch of an apple-tree that overhung the croquet-ground, within a few rods of my house. It was first noticed in conse-

quence of its bold little builder flying in my face whenever I approached too near, even before its nest contained any eggs. The grounds were in frequent use, and the pair were at first a good deal disturbed by these constant intrusions, but they soon became reconciled to their company, and would not leave their position, even though the game was contested immediately under their nest, which was thus often brought within a foot of the heads of the players. Before this nest was quite finished, the female began her duties of incubation. Her assiduous mate was constantly engaged at first in completing the external ornamentation of the nest with lichens and mosses, and then with a renewal of his interrupted concerts of song. These duties he varied by frequent captures of insects, winged and creeping, most of which he duly carried to his mate. His song was varied, sweet, and touchingly beautiful. Less powerful than the notes of several others of its family, except those of the *Warbling*, I know of none more charming.

These birds reach New England about the 10th of May, and usually have their nests constructed early in June. Their habits, in all essential respects, are the same as those of all its family. They are somewhat confiding and trustful of man, are readily approached, and soon become so well acquainted with those among whom they have a home as to fearlessly come to the windows of the house in pursuit of spiders or flies, and even to enter them. In the latter case they cannot readily make their exit, and soon lose their self-possession, beating their heads against the walls and ceiling in vain attempts to get out, unless caught and released. In one instance a young bird, that had entered my barn-chamber, became so entangled in cobwebs, around his wings and feet, as to be unable to escape again. When taken in the hand, and his meshes one by one picked out from about his feet and quills, he was very docile, made no resistance or outcry, nor any attempt to escape, until he was entirely freed from his bonds, although it required some time and care to accomplish it. When entirely freed from these clogs, and permitted to go, he flew away very deliberately to a short distance, and occupied himself with dressing his disordered plumage.

The nest of this species is also a pendent structure, and hemispherical in shape. It may always be readily distinguished from any other nest of this family by the profusion of lichens and mosses with which its outer portion is adorned and covered, giving it the appearance of a large moss-covered knot.

In most of the towns in the vicinity of Boston this species, though not abundant, is quite common. Their nests, built usually in low and rather conspicuous positions for birds of this kind, occur most frequently in gardens and orchards. One of these, found suspended from a moss-covered branch of an apple-tree in Roxbury, may be taken as typical of its kind. Its rim was firmly bound around the fork of a branch by a continuation of the materials that form the outside of the nest itself. These are an interweaving of spiders'-webs, and silky threads from insect cocoons, largely intermingled

with mosses and lichens, and thus made to conform closely in appearance to the moss-grown bark of the tree. The under portion of the nest is strengthened by long strips of the inner bark of the wild grape. Within is an inner nest made of fine grassy stems and bark. It forms exactly a half-sphere in shape, is symmetrical, and is very thoroughly made. Its diameter is four, and its height two and one fourth inches.

Mr. Nuttall describes a nest of this bird, found by him suspended from the forked twig of an oak, near a dwelling-house, as coated over with green lichens, attached very artfully by a slender string of caterpillars' silk, the whole afterwards tied over by almost invisible threads of the same, so nicely done as to appear to be glued on. The whole fabric was thus made to resemble an accidental knot of the tree, grown over with moss. Another nest, observed by the same writer, was fixed on the depending branches of a wild cherry, and was fifty feet from the ground. So lofty a position as this is probably very unusual. I have never met with any higher than ten feet from the ground.

The food of this Vireo is chiefly insects, and in the breeding-season is altogether so. Later in the season they mingle with these various kinds of small berries.

The eggs of this species vary from .95 to .88 of an inch in length, and from .65 to .60 in breadth. Their ground-color is white, often with a very perceptible tint of roseate when fresh. In this respect they differ in a very marked manner from the eggs of any other of this genus, except, perhaps, the *barbatula*, and may thus always be very easily recognized. They are more or less boldly marked with blotches of a dark roseate-brown, also peculiar to the eggs of this species, though varying greatly in their size and depth of color.

This Vireo winters, in great numbers, in Central America, and was largely represented in the collection of Dr. Van Patten from Guatemala. It was also found at Pirico, in Colombia, South America, by Mr. C. W. Wyatt. It occurs in abundance as far to the west as Grinnell, Iowa, where Mr. W. H. Parker found it to be a very common summer resident.

SUBGENUS **VIREO**, VIEILL.

Vireo, VIEILL, Ois. Am. Sept. 1, 1897, 83. (Type, *Muscicapa noveboracensis*, GM.)

CHAR. Wings short and rounded, a little longer than the tail, equal to it, or shorter



Vireo noveboracensis.

First primary distinct and large, from two fifths to half or more the length of the second, shorter or not longer than the eighth.



Vireo noveboracensis.

The characters of *Vireo* are essentially those of *Vireosylva*; the bill, however, is shorter; the first quill always present, better developed, sometimes more than half the second. The wings are shorter, and more rounded; the tarsi usually longer. The sections are as follows:—

Vireo. Wings pointed; first quill less than half the second, which is about equal to seventh or eighth, and decidedly longer than the tenth primary and the secondaries. Type, *V. noveboracensis*.

Vireonella. Wings rounded, scarcely longer than the tail; the first quill half as long as the second (or more than half), which is not longer than the tenth primary and secondaries, or even less. Bill and feet generally much stouter than the preceding. Type, *V. gundlachi*.

None of the species of *Vireonella* are found in the United States.

Species.

COMMON CHARACTERS. All the species olivaceous or ashy above, beneath whitish, or olivaceous-yellow. Wings with light bands. A light stripe from bill over the eye, but not beyond it, except in *carmioli*. Iris brown, as far as known, except in *V. noveboracensis*, where it is white.

A. Two conspicuous light bands on wing.

a. Sexes different. Whole lore white.

1. **V. atricapillus.** Above olive-green, outer edges of tail-feathers bright yellowish-green; wing-bands greenish-white. Sides olivaceous-yellow. *Male.* Head and neck (except lore, orbital ring, chin, and throat) deep black; lower parts pure white medially. *Female* with the black replaced by dull slate; lower parts ochraceous-white medially. Wing, 2.30; tail, 1.80; tarsus, .68; bill, from nostril, .24. *Hab.* Southern Texas; Mazatlan, Mexico.

b. Sexes alike. Lore dusky, with light mark above it.

2. *V. carmioli*.¹ Above brownish olive-green. Beneath, with supra-loral stripe, orbital ring, and light markings on the wings, light ochrey-yellow more whitish on the throat. Wing, 2.55; tail, 2.00; tarsus, .66; bill, .26. *Hab.* Costa Rica.

3. *V. noveboracensis*. Above olive-green, ashy across the nape. Supra-loral stripe and orbital ring deep yellow. Beneath ashy-white on throat, purer white on abdomen; sides, and a tinge across the breast, light yellow. Iris white. Wing, 2.40; tail, 2.00; tarsus, .63; bill, .26. *Hab.* Eastern Province of United States, south (in winter) to Guatemala (and Bogota?); very rare in Cuba; abundant and resident in Bermuda.

4. *V. huttoni*. Above grayish-olive, more olive-green toward tail. Below pale grayish-buff. Orbital ring very broad, yellowish-white. Wing, 2.50; tail, 2.05; tarsus, .67; bill, .24. *Hab.* California; in winter, Western Mexico to Oaxaca.

B. Only one band on wing, and this indistinct.

5. *V. belli*. Above ashy-olive, more viresecent posteriorly. Markings on side of head not well defined. Below dull white, with a slight buffy tinge, strongly stained with yellow on sides and flanks. Upper feathers of middle row of wing-coverts passing into paler at tip, producing an indication of an anterior band. Wing, 2.20; tail, 1.80; tarsus, .69; bill, .25. *Hab.* Plains between the Mississippi Valley and the Rocky Mountains, from Dakota to Texas; in winter south to Tehuantepec, Mexico.

6. *V. pusillus*. Above grayish-ash, very slightly tinged with olive on rump. Below dull white, ashy laterally, the flanks with the slightest possible tinge of yellow. Wing, 2.30; tail, 2.20; tarsus, .69; bill, .24, .13 deep. *Hab.* Arizona; Cape St. Lucas, Lower California; California north to Sacramento City.

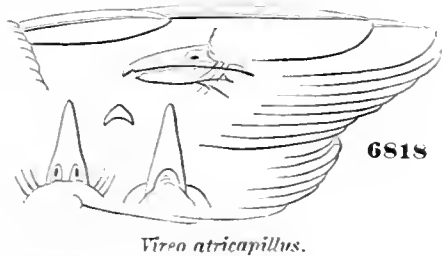
7. *V. vicinior*. Above bluish-ash, below ashy-white, scarcely more ashy laterally. Lores entirely ashy-white. Wing, 2.60; tail, 2.40; tarsus, .67; bill, .26, .18 deep. *Hab.* Fort Whipple, Arizona.

Vireo atricapillus, WOODHOUSE.

BLACK-CAPPED VIREO.

Vireo atricapillus, WOODHOUSE, PR. A. N. SC. 1852, 60 (San Pedro, Tex.). — IR. SITGREAVES'S Rep. 1853, 75, pl. i, Birds. — CASSIN, Illust. 1854, 153, pl. xxiv. — BAIRD, Birds N. Am. 1858, 337; Rev. 353. — COOPER, Orn. Cal. I, 1870, 121.

SP. CHAR. (No. 6,818.) Top and sides of head and neck black; rest of upper parts olive-green. Wing and tail feathers almost black on their upper surface, the quills and rectrices edged with olive (paler on the exterior primaries), the wing-coverts with two greenish-white bands on a blackish ground. Broad line from bill to and around eye (not meeting on forehead) with under parts white; the sides of body olivaceous; the axillars and inner wing-coverts (perhaps crissum)



¹ *Vireo carmioli*, BAIRD, Review Am. B. I, 1865, p. 356. *Hab.* Costa Rica.

yellowish. Bill black; feet plumbeous; iris bright red. First quill less than half the second, which about equals the tenth; third little shorter than fourth (longest).

Female. With the black replaced by dull slate; lower parts ochraceous-white medially. Possibly a distinct species (Mazatlan).

(No. 6,818.) Fresh specimen: Total length, 4.75; expanse of wings, 7.25; wing from carpal joint, 2.12. Prepared specimen: Total length, 4.10; wing, 2.25; tail, 1.95.

HAB. Southern border of Western Texas; Mazatlan.

The black head of this species, as far as known, makes it unique in the genus. It is extremely rare, but three or four specimens being known.

We refer to this species a specimen — probably a female — obtained at Mazatlan, on the western coast of Mexico, in April, by Colonel Grayson (S. I., No. 55,046). This specimen differs from those from Texas in having the black of the head replaced by a dull dark slate-color, the olive above rather less virescent, and the lower parts not pure white, but somewhat buffy. As all the other essential characters are identical, there being in both the white space covering the whole lore, and orbital ring interrupted on top, — features not seen in any other species, — we have little hesitation in considering them the same species; which opinion is moreover strengthened by the fact, that among the Texas specimens, all with black caps, there are no females.

HABITS. Of the general history and habits of this rare species very little is known. It was first met with by Dr. Woodhouse, on the 26th of May, 1851, in Western Texas. This was on the Rio San Pedro, within ten miles of its source. He found it among some cedars, and was attracted by its very singular notes. It was in continual motion, like a Wood Warbler, and was by him at first supposed to be one of those birds. He obtained two specimens, both of which proved to be males.

Mr. John H. Clark, the naturalist of the Mexican Boundary Commission, likewise found this species in Texas, and not far from the same locality in which it was discovered by Dr. Woodhouse. His attention also was drawn to the bird by its shrill discordant chirp, which it uttered incessantly in its pursuit of insects. Three specimens only were seen, and all of them at one locality, the valley of the Rio San Pedro, to which it seemed to be confined. It was not at all shy, and showed no concern when Mr. Clark approached within a few rods. Its constant motion, hopping incessantly from branch to branch, made it a matter of some difficulty to procure specimens. It was found in June, and the single specimen shot by Mr. Clark was also a male.

Vireo noveboracensis, BONAP.**WHITE-EYED VIREO.**

Muscicapa noveboracensis, Gm. Syst. Nat. 1, 1788, 947 (*Green Flycatcher*, PENNANT, Arctic Zoöl. II, 389). *Vireo noveb.* BON. Obs. Wilson, 1825. — AUD. ; CASSIN. — BAIRD, Birds N. Am. 1858, 338 ; Rev. 354. — MAX. — SCLATER, P. Z. S. 1857, 204 (Xalapa) ; 228 (Vera Cruz). — SCLATER & SALVIN, Ibis, II, 1860, 274 (Coban, Guat.). — JONES, Nat. Bermuda, 1859, 71 (resident). — CAB. Jour. III, 469 (Cuba). — GUNDLACH, Cab. Jour. 1861, 324 (Cuba ; rare). — SAMUELS, Birds N. Eng. 275. *Vireo musicus*, VIEILL. Ois. Am. Sept. I, 1807, 83, pl. liii. *Muscicapa cantatrice*, WILS. II, 1810, 266, pl. xviii. Figures : AUD. Orn. Biog. pl. lxiii. — IB. Birds N. A. IV, pl. cexl.

SP. CHAR. (No. 10,193 ♂, Illinois.) First primary about half the length of second, which is longer than secondaries, and about equal to the eighth ; the fourth longest ; third and fifth little shorter.

Above quite olive-green ; sides of neck, and a gloss on its upper surface, ashy. The middle concealed portion of feathers of lower back and rump pale sulphur-yellowish. Beneath white ; the chin and lower cheeks with a grayish tinge ; the sides of breast and body, with axillars and base of crissum (more faintly), bright yellow ; the inner wing-coverts and rest of crissum much paler, almost white. A broad yellow line from nostrils to and continuous with a yellow ring round the eye, which is encircled exteriorly by olivaceous ; a dusky loreal, but no post-ocular spot. Wings with two covert-bands and innermost secondaries externally, broadly yellowish-white ; rest of quills edged externally with olive, except the two outer and tips of other primaries, which are grayish. Rectrices edged externally with olive, except outermost, which is bordered by grayish. All the long quills bordered internally by whitish. Bill blue-black, paler on the edges ; legs dark plumbeous. Iris white. Total length, 4.90 ; wing, 2.40 ; tail, 2.20.

HAB. United States, west to base of Rocky Mountains ; south to Guatemala ; Bogota ? Very rare in Cuba. Abundant and resident in the Bermudas.

Specimens vary slightly in a greater amount of ashy on the head, and less brilliancy of the yellow of head and sides. Sometimes there is a decided ashy shade in the white of throat and jugulum, which again has a very faint tinge of yellowish.

HABITS. The White-eyed Vireo is one of the most common and one of the most widely diffused of its genus in all parts of the United States east of the Rocky Mountains. It apparently breeds in all parts of the Union, from Texas and the Indian Territory on the southwest to Iowa and Wisconsin, and as far to the northeast as Massachusetts. In the last-named State it becomes exceedingly rare, and beyond it is apparently not found, none having been met with either by Messrs. Verrill or Boardman in any part of Maine. In Western Massachusetts it was not found by Mr. Allen, though it occurs in the eastern part, along the coast. Mr. Dresser found it common in Western Texas, many remaining there to breed, and Dr. Woodhouse also found it abundant in Texas, New Mexico, and the Indian Territory, where it frequented the thickets bordering on the streams. It breeds abundantly in the Northwest States of Illinois, Iowa, and Wisconsin. It also breeds in the islands of Bermuda.

In the winter months this species retires to the more southern States, and to Mexico and Central and South America, though Sumichrast does not give it as occurring in the Department of Vera Cruz. Nuttall found it in South Carolina in the middle of January, and Wilson met with them in full song in Georgia in February. The fact that it was seven weeks after this before they made their appearance in Pennsylvania is given by that writer as evidence of the gradual progression made by this species in its movements northward, regulated by the development of the season. Audubon, however, states the first of March as about the time of its first appearance in Louisiana. He also mentions that this species is a constant resident in the Floridas during winter, and also in the lower portions of Alabama and Georgia. A large number also pass farther south, as is shown by the abundance of the arrivals in early spring on the coast of Texas. Mr. Audubon states also that Townsend met with them on the Columbia River, and that he himself found them along the coast in Maine, Nova Scotia, and Labrador. This, however, I am inclined to consider a misstatement, as they have not since been detected either west of Dakota or north of the 42d parallel.

This Vireo is one of the most conspicuous singers of this family. Its songs are more earnest and louder than those of any of our Eastern species, and exhibit the greatest variations, beginning in the earlier part of the season with a simple low whistle, but changing in May into a very quaint and peculiar succession of irregular notes. Some of these are very softly and sweetly whistled, while others are uttered with a vehemence and shrillness that seem hardly possible in so small a bird.

This is an unsuspecting and familiar bird, permitting a near approach, and when whistled to will often stop and eye you with marked curiosity, and even approach a little nearer, as if to obtain a better view, entirely unconscious of any danger. This is not so, however, when they have a nest. On this occasion they exhibit great uneasiness when their nest is visited, approaching very near to the intruder, looking down upon him with marked expressions of uneasiness, and scolding all the while with great earnestness, and with a hoarse mewling that is very peculiar. This display is continued even after the fledglings are full grown and able to take care of themselves.

The food of this species in early summer is almost exclusively small insects, which it gleans with great assiduity. In Eastern Massachusetts, like all its kindred, it feeds eagerly upon the young larvae of the destructive canker-worm, and doubtless, in the wilder portions of the country, is of considerable service in restricting the increase of this scourge.

The White-eyed Vireo may usually be found in wild, swampy, open grounds, near the edges of woods, and where there are small thickets of smilax and other briars and wild vines, in the midst of which it often builds its pensile nest. These nests are rarely, if ever, more than three or four feet from the ground. Two nests of this bird, one from Neosho Falls, Kansas,

the other from Lynn, Mass., may be taken as characteristic of the species. They are almost exactly hemispherical in shape, their height and diameter being the same, — three inches. They were suspended from low bushes, hanging from the extreme ends of the twigs, among which the nests were fastened by fine impacted masses of wood-mosses, which are very nicely and elaborately interwoven with the lower portions of the outer covering of the nest. The latter is composed of a singular medley of various materials, among which may be noticed broken fragments of dry leaves, bits of decayed wood and bark, coarse blades of grass, various vegetable fibres, lichens, fragments of insects, mosses, straws, stems, etc. These are all wrapped round and firmly bound together with strong hempen fibres of vegetables. Within this outer envelope is an inner nest, made of the finer stems of grasses and dry needles of the white pine, firmly interwoven. For the size of the bird, these nests are proportionally larger and deeper than any others of the common kinds. The cavity is two or two and a half inches deep.

The eggs are usually five in number. One from Georgia measures .77 by .55 of an inch, and is of an oblong-oval shape; another, from Massachusetts, is much more broadly ovate, measuring .80 by .62. Their greatest breadth is .65 of an inch, and their length .80. They have a clear crystal-white ground, spotted about the larger end with fine dark-purple and reddish-brown dots.

This species is one of the most common foster-parents of the Cowbird, the eggs of which are always tenderly cared for, and the offspring nurtured by them, always to the destruction of their own nestlings.

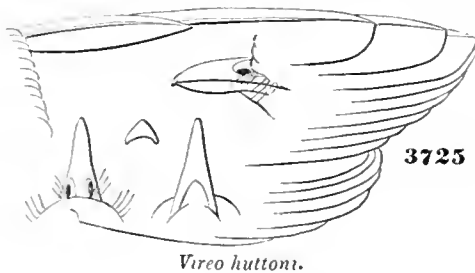
Vireo huttoni, CASSIN.

HUTTON'S VIREO.

Vireo huttoni, CASSIN, Pr. A. N. Sc. Phila. 1851, 150 (Monterey, Cal.). — Ib. 1852, pl. i, fig. 1. — BAIRD, Birds N. Am. 1858, 339, pl. lxxviii, fig. 2; Rev. 357. — SCLATER, P. Z. S. 1858, 302 (Oaxaca); 1862, 19 (La Parada). — Ib. Catal. 1861, 358, no. 256. — COOPER, Orn. Cal. I, 1870, 121.

SP. CHAR. (No. 3,725.) First quill rather less than half second, which about equals the tenth; third a little longer than seventh; fourth and fifth nearly equal, and longest. Tail slightly rounded, shorter than wings. Bill very small.

Above olive-green; brightest behind, especially on rump and edging of tail, duller and more ashy towards and on top and sides of head and neck. Wings with two bands on coverts, and outer edges of innermost secondaries rather broadly olivaceous-white; other quills edged externally with olive-green, paler towards outer primary; internally with whitish. Lateral tail-feather edged externally with yellowish-white. Feathers of rump with much concealed yellowish-gray.



Vireo huttoni.

Under parts pale olivaceous-yellowish; purest behind, lightest on the throat and abdomen; the breast more olivaceous, the sides still deeper olive-green, the breast soiled with a slight buffy tinge. Axillars and crissum yellowish; the inside of wings whitish. Loral region and a narrow space around eye dull-yellowish, in faint contrast to the olive of head. Bill horn-color above, paler below; legs dusky.

Total length, 4.70; wing, 2.40; tail, 2.05; difference between tenth and longest quills, .43; exposed portion of first primary, .72, of second, 1.52, of longest, fourth, and fifth (measured from exposed base of first primary), 1.90; length of bill from forehead, .45, from nostril, .29, along gape, .60; tarsus, .72; middle toe and claw, .50, claw alone, .16; hind toe and claw, .45, claw alone, .22.

HAB. California and Western Mexico, to Oaxaca; La Parada (SCL.); Orizaba (alpine region, resident, SEMICHUR.).

The description just given is based upon the type specimen, probably in winter plumage. Spring specimens do not vary materially except in greater purity of white edgings of the feathers. Two Mexican specimens are rather larger, the wing measuring 2.50, the tail 2.30. No other differences are appreciable. In general the first primary is about half the second, sometimes rather less.

This species is readily distinguished from other Vireos, excepting *V. modestus*, which it greatly resembles in the small bill, form, coloration, and size; nor indeed is it easy to separate them. In *modestus*, however, the first quill is usually more than half the second, not less; the wing shorter, and less pointed; the tail longer. The upper parts are more uniform, not much brighter towards rump.

HABITS. This species is one of comparatively recent origin, and of its history but little is as yet known. It was first described by Cassin, in 1851, from a specimen obtained in Monterey, Cal. It has been found in various parts of California, in the valley of the Gila, and in the northern and eastern portions of Mexico. Mr. Sumichrast gives it as a resident of the alpine region of the Department of Vera Cruz.

Dr. Cooper has observed this bird near San Diego, late in February, where he at first mistook it for the Ruby-crowned Wren, a bird that winters there in abundance, and which he states resembles this species closely in appearance and habits. Two of them came to within a few feet of where he sat, scolding in a harsh tone. He recognized then their larger size and different plumage, as well as their remarkably large eyes, and a peculiar slowness and deliberation in their movements as they searched the foliage for insects.

Dr. Cooper has since found them wintering plentifully up to latitude 38°. Having observed but few of them in the Coast Range, in May, he thinks that most of them go farther north in summer. At San Diego, however, he shot a female, on the 9th of March, containing an egg nearly ready to be laid. He had not been able to find the nest, which is presumed to be built in the dense shade of the evergreen oaks (*Quercus agrifolia*). Their song is said to consist of a few short and quaint notes. Among the memoranda of Mr. Xantus, made at Fort Tejon, I find the following: (No. 1,827.) Nest and

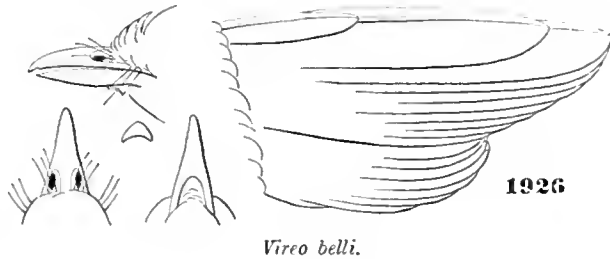
eggs of *Virco huttoni*, found May 8, one foot from the ground, under high trees, suspended from three high stems of weeds, fastened to them, but very loosely put together. The eggs had been incubated. He furnished no further description of nest or eggs.

Vireo belli, AUD.

BELL'S VIREO.

Virco belli, AUD. Birds Am. VII, 1844, 333, pl. cccclxxxv (Missouri River). — CASSIN, Pr. A. N. Sc. Phila. 1851, 150. — BAIRD, Birds N. Am. 1858, 337; Rev. 358. — SCLATER, Catal. 1861, 42, no. 258. — BON. Consp. 1850, 330. — COOPER, Orn. Cal. I, 1870, 123.

SP. CHAR. (No. 1,926.) Above olive-green, brightest on the rump; tinged anteriorly with ashy; the top and sides of head ashy, in faint contrast. A line from nostrils to eye (scarcely beyond it), and eyelids very pale yellowish-white; lores dusky. Under parts, including inner wing-coverts, and edge of wing, creamy-white; the sides, axillars, and crissum pale yellow (sides of lower neck and of breast glossed with olivaceous, faintest on the longer feathers of the latter. Two rather narrow bands on the wing-coverts, and the outer edges of innermost secondaries white; the other quills edged with faded olivaceous. Inner edges of quills whitish. Tail-feathers brown, edged externally with olive; internally fading into paler brown. Median portion of rump feathers concealed with pale yellowish. Bill horn-color above, pale below. Legs plumbeous. "Iris brown."



Vireo belli.

First quill spurious; not quite half the second, which is about equal to the eighth; third and fourth quills longest; fifth scarcely shorter. Tail nearly even, or a little rounded, the feathers narrow.

Total length, 4.20; wing, 2.18; tail, 1.90; tarsus, .75.

HAB. United States, from Missouri River to base of Rocky Mountains; Tehuantepec, Mexico (October, SUMICHRIST); Missouri (HOY); Iowa (ALLEN); Southeast Illinois (RIDGWAY).

The above description is taken from a type specimen received from Mr. Audubon, and represents the average spring plumage. Autumnal skins are rather brighter, and there is occasionally an ochraceous tinge on the white of the under parts.

This species at first sight appears like a miniature of *V. gilvus*, the head being almost exactly similar. The back is, however, much brighter olive, the sides and crissum deeper yellow. The superciliary light stripe is shorter. The white markings of the wings are wanting in *gilvus*. The wing, tail, and feet are entirely different in their proportions.

HABITS. This species was first procured by Mr. Audubon's party in the excursion to the Yellowstone River, in what is now known as Dakota Ter-

ritory. In his account of it Mr. Audubon states that it is usually found in the bottom-lands along the shores of the Upper Missouri River, from the neighborhood of the Black Snake Hills, as far as they ascended that river. In its habits he describes it as more nearly allied to the White-eyed Vireo than any other.

Dr. Woodhouse, in his report of the Zuñi River Expedition, mentions finding this species abundant in Texas. Mr. Dresser also speaks of it as not uncommon, during the summer, near San Antonio, and remaining there to breed. He mentions finding a nest on the 2d of July in a *vesotche* bush near the San Pedro, containing three eggs of this species and one of the Cow-Bunting. Being anxious to procure the parent bird he left it, but on his return the nest had been torn and the Vireo's eggs smashed. Dr. Heermann found a nest on the Medina about the same time. He describes this nest as beautifully formed of fine grasses, and hung from the small twigs of a tree. The eggs, four in number, were very small, white, with an occasional reddish dot at the larger end. The nest found by Dr. Heermann was attached to the pendent twigs of a willow. The stomachs of these Vireos were found to contain small green caterpillars.

Dr. Coues met with this species near Fort Riley, May 23. It appeared to be quite common, and was found inhabiting thickets and clumps of bushes, like *V. noveboracensis*, but having a very different song, the peculiarity of which first attracted his attention. Mr. Ridgway found it to be a common summer resident in the thickets and copses of Southern Illinois, especially in the prairie districts. He first met with it on the 8th of June, 1871, on Fox Prairie, in Richland County. His attention was drawn to it by its peculiar song, which has a general resemblance to that of the White-eyed Vireo, having the same odd delivery, but being more sputtering, reminding one somewhat of the song of *Troglodytes aedon*.

This Vireo appears to have quite an extended distribution during the breeding-season, or from Texas to the Upper Missouri, and even as far as the eastern edge of Southern Illinois. It breeds also as far to the east as Eastern Kansas. Its western limits are not so clearly defined. It was not found by Mr. Ridgway in Nevada or Utah, nor by Dr. Coues in Arizona.

A nest of this species, found in June, near Neosho Falls, Kansas, by Mr. B. F. Goss (S. I. Coll., 1,875), is pensile; suspended from two small twigs, which make the basis of three fourths of its rim. Over these is strongly bound a finely felted webbing of the flax-like fibres of plants, interwoven with slender stems. With these are connected and interwoven also the materials that make up the periphery of the nest itself. This is composed of long and slender strips of bark, fragments of dry leaves, bits of wood, and various other fragmentary substances. The nest, unlike others of this family, is lined with down, and the fine long hair of some animals, instead of with vegetable stems. The diameter as well as the height of this nest is about two and a half inches.

Another nest from West Texas, obtained by Captain Pope, is essentially different in its general characteristics. It is three inches in diameter, and but one inch and three quarters high. The opening is circular, but only one and a half inches wide. Below the rim the cavity widens until it is two and a half inches in diameter. The outer nest is made up of an interweaving of fine strips of bark and dry leaves, intermixed with and firmly bound around by strong flax-like fibres of different plants. Within, it is lined with fine flexible grasses and stems of plants.

The eggs of this species are from .73 to .76 of an inch in length, and from .52 to .56 in breadth. They are pure white, sparingly spotted with fine red dots distributed around the larger end.

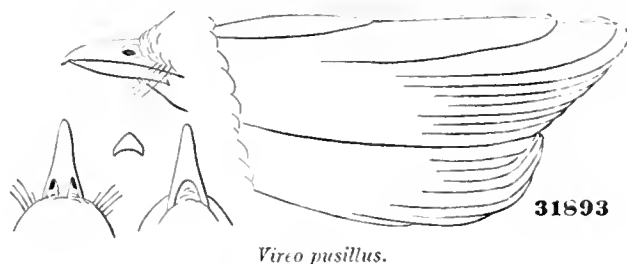
Vireo pusillus, COUES.

LEAST VIREO.

Vireo pusillus, COUES, Pr. A. N. Sc. Phila. 1866. — BAIRD, Rev. Am. B. 360. — ELLIOT, Illust. Birds N. A. I, vii. — COOPER, Orn. Cal. I, 1870, 124. ? *Vireo belli*, COOPER, Pr. Cal. Acad. 1861, 122 (Fort Mohave).

SP. CHAR. Somewhat similar in general appearance to *Vireosylva gilva* and *swainsoni*, but smaller. Bill very small; tarsi lengthened. Wings about equal to the tail, which is lengthened, graduated, and with the feathers narrow and pointed. Exposed part of first primary about half that of the second, which is intermediate between seventh and eighth; the fourth and fifth longest.

Above grayish-ash, with a tinge of olive behind. Beneath, including the inside of the wings, white, with a soiled tinge on the sides of the throat and across the breast. Axil-



Vireo pusillus.

lars and flanks exhibiting a faint trace of greenish-yellow. Eyelids and a short line from the nostrils to the eye whitish; no other stripe apparent. A dusky loreal spot. Primary coverts edged indistinctly with whitish, producing an obscure band (a second on the middle coverts hardly appreciable). Quills and tail-feathers edged externally with pale grayish-olive, the innermost secondaries with whitish. Bill dusky above, whitish beneath. Legs plumbeous. Iris of two specimens marked as "light brown," of another as "rufous."

The details of structure taken from No. 23,785, of color from No. 23,788: Length, of 23,785 ♂, 4.80 when fresh, of skin, 4.25; wing, 2.25; tail, 2.25; bill above, .37; tarsus, .73; middle toe and claw, .50; hind toe and claw, .42. First quill, .70; second, 1.40; longest (fifth), 1.64. (Cape St. Lucas.)

HAB. Cape St. Lucas; San Diego; Fort Mohave, and Arizona; Sacramento, California (RIDGWAY).

This species scarcely needs comparison with any other, except, perhaps, *V. pallens* of Middle America, which, however, besides belonging to *Virconella*, and not *Vireo*, as restricted, differs in many minor, but no less essential points. The coloration of the two is remarkably similar, but *pusillus* has

only one indistinct band on the wing, instead of two sharply defined ones. The bill is much smaller, and the tail longer, than in *pallens*. *V. belli* is less ashy above and less pure white beneath, the sides much more yellowish; the wing is also longer, and the tail much shorter. *V. vicinior* is much larger, with the wing longer than the tail, instead of shorter; the ash above has a bluish instead of a greenish cast; the lores are wholly grayish-white, etc.

HABITS. The Least Vireo is a recently described species of its genus, and one in regard to whose history comparatively little has been ascertained. It was first met with at Cape St. Lucas by Mr. Xantus, and described by Dr. Cones in 1866. Dr. Cones assigns as its habitat Lower and Southern California, Sonora, and Arizona, at least as far north as Fort Whipple. Dr. Cooper also found it at Fort Mohave. Dr. Cones met with it fifty miles south of Fort Whipple, where he found it breeding abundantly. He gives no information in regard to its habits. Dr. Cooper states that he found it rather common along the upper part of Mohave River, in June, 1861; and in the following spring, about April 20, they began to arrive at San Diego in considerable numbers. In its habits Dr. Cooper thinks it greatly resembles *V. gilvus*, though it differs entirely in its song. The notes of those that he heard singing resembled very much those of the *Poliophtilas* uttering a quaint mixture of the notes of the Wrens, Swallows, and Vireos. They also seem to possess more or less of imitative powers. At Sacramento he saw and heard, in the willows along the river, individuals which, from their peculiar notes, he had no doubt were of this species, but he did not verify his conjectures. His suppositions were confirmed later by the observations of Mr. Ridgway, who states that he found these birds the most abundant as well as the most characteristic Greenlet in the vicinity of Sacramento. It is a species, he adds, easily recognized, being in all respects quite distinct from any other. The character of its notes, as well as its habits, show it to be a true Vireo. Its song, though weaker, bears a great resemblance to that of the White-eyed. A nest of this species was found by him near Sacramento. It was placed about three feet from the ground, in a low bush in a copse of willows. Like all the nests of this genus it was pensile, being attached to and suspended from the twigs of a branch.

Two nests of this interesting species were also obtained near Camp Grant, Arizona, in 1867, by Dr. E. Palmer. They are wrought like all the nests of this kind, below the small forked branches of a tree, suspended from the extremity of its twigs. They each have a diameter of about three and a half inches, a height of two, with a cavity an inch and a half deep and two wide. The external portion, like the nests of the *V. belli*, is wrought with woven hemp-like vegetable fibres, strongly bound around the ends of the twigs and covering the entire exterior. Within this is placed a strong, firmly made basket, composed of slender strips of bark and long, fine, and flexible pine-needles, with a lining of finer materials of the same. In one of these nests

there were three eggs of the Vireo, and one of a *Molothrus* (*obscurus*?). The former were of a bright crystalline whiteness, marked with very minute and hardly discernible spots of red, and measure .69 by .56 of an inch. The egg of the *Molothrus*, except in its much smaller size, is hardly distinguishable from those of the common *M. pecoris*, and measures .75 by .56 of an inch.

In the other nest were also three eggs of the Vireo. They correspond in size, but are much more distinctly marked with larger spots of a dark red and reddish-brown. In this nest there is a somewhat larger proportion of fine strips of inner bark, and mixed with these are also a few silky insect cocoons, by means of which the nest is firmly bound around the twigs from which the whole is suspended.

Vireo vicinior, COUES.

ARIZONA VIREO.

Vireo vicinior, COUES, PR. A. N. SC. PHILA. 1866. — BAIRD, REV. AM. B. 361. — ELLIOT, ILLUST. BIRDS N. A. I, vii. — COOPER, ORN. CAL. I, 1870, 125.

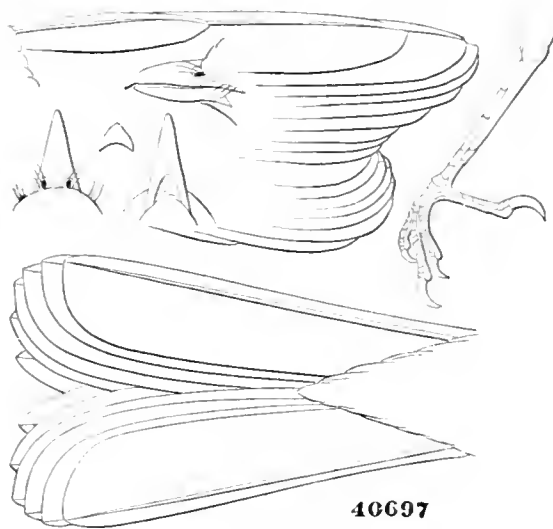
SP. CHAR. (No. 40,697 ♂.) Bill stout, considerably compressed and deep. Wings moderately pointed, about equal to tail, which is decidedly graduated; first quill rather more than half the second, which about equals ninth and the secondaries; the fourth and fifth longest. Tarsus considerably longer than middle toe and claw; lateral toes quite conspicuous for their disproportion, the inner claw reaching only to base of outer, and falling short of base of middle; the terminal digit of inner toe reaching only to end of second joint of middle toe.

Upper parts, with sides of head and neck, ashy or light plumbeous, faintly olivaceous on rump. Beneath white; slightly ashy on sides of breast. Flanks and inside of wings showing a faint trace of yellow, only appreciable on raising the wings. An obsolete line from bill to eye, and a more distinct ring round the eye, white.

No bands on the wing, except a faint edging of whitish on the greater coverts; the quills edged internally with white. Bill and legs plumbeous. "Iris brown. Mouth livid, bluish-white." (COUES.)

Fresh specimen: Total length, 5.60; expanse of wings, 8.60. Prepared specimen: Total length, 5.10; wing, 2.50; tail, 2.60, its graduation, .22; difference of tenth and longest quills, .40; exposed portion of first primary, .85, of second, 1.65, of longest (measured from exposed base of first primary), 1.95; length of bill from forehead, .50, from nostril, .32, along gape, .61; depth of bill, .18; tarsus, .72; middle toe and claw, .51, claw alone, .16; hind toe and claw, .40, claw alone, .19.

HAB. Prescott, Arizona.



Vireo vicinior.

This species might at first sight be taken for a small specimen of *V. plumbeus*, the colors, character of bill, etc., being very similar, except that the white of lores and around eye is much less distinct, the lore without any blackish before the eye, and there is only one faint band on wing, instead of two conspicuous ones; the tail-feathers, too, lack the distinct white edgings. The much more rounded wing, and the first primary half the second or more, will, however, readily distinguish them. The form of the bird is very much that of *V. pusillus*, which it resembles considerably also in color. The outer quill is, however, longer, the bill deeper and more compressed, the inner lateral toe considerably shorter, and the size larger. The colors are purer, without the olive of the back or the yellowish of the under parts; the bill, too, is entirely dark plumbeous, instead of horn-color, whitish beneath. From *V. pallens* it is distinguished by a smaller, darker bill; longer tail and wing; one wing-band, not two; and purer colors.

HABITS. In regard to the habits of this well-marked but very rare species but little is as yet known. It was first described, in 1866, by Dr. Coues, from a single specimen obtained by him near Fort Whipple, Arizona. It was shot May 4, 1865, and is supposed by Dr. Coues to be a summer resident of Arizona wintering in the Gila and the Lower Colorado Valleys, or in Sonora.

FAMILY **AMPELIDÆ**. — THE CHATTERERS.

The characteristics of the *Ampelidæ* have already been presented in the synopsis of allied families; chief among them, the short, broad, depressed, and triangular bill with short gonys, the deeply cleft mouth, the short tarsus, and the tendency to subdivision of its lateral plates.

The South American genus, *Dulus*, probably forms the type of a subfamily *Dulina*, characterized by the much arched gape of mouth, the metatarsal scutellæ in two series, and the body streaked beneath, as in young *Ampelis*. The two other subfamilies may be defined as follows: —

Subfamilies.

COMMON CHARACTERS. Gape of mouth nearly straight. Metatarsal scutellæ in three series. Body plain beneath.

Ampelinæ. Wings very long and much pointed, longer than the short, even tail. First primary excessively rudimentary; the outermost about the longest. Gape without bristles. Frontal feathers extending forward beyond the nostrils.

Ptilogonatinæ. Horny appendages like red sealing-wax at end of shaft of secondaries. Wings rounded, shorter than the graduated tail. First primary nearly half the second. Gape well bristled. Frontal feathers falling short of the nostrils. No red horny appendage to wing-feathers.

SUBFAMILY **AMPELINÆ**.

CHAR. Legs moderate. Nostrils elongated, linear, with the frontal feathers extending close to the edge and to anterior extremity, concealing them; these feathers short, velvety, and erect, with few bristles. Wings very long and acute; outer or first primary so much reduced as to be almost inappreciable; the second nearly the longest. Wing nearly twice the length of the short, narrow, even tail. Under coverts of tail reaching almost to its tip. Secondary quills with flat horny appendages at end of shaft like red sealing-wax. Young birds streaked beneath as in *Dulus*. Adults plain.

Of this family as restricted, we have but a single genus in America.

GENUS **AMPELIS**, LINN.

Ampelis, LINN. Syst. Nat. 12th ed. I, 1766, 297. (Type, *Lanius garrulus*, L. Named Linnæus in 1735.)

GEN. CHAR. Tail even. Tertiaries and secondaries with horny appendages like red sealing-wax. A well-developed soft crest.

A more elaborate diagnosis of this genus could be readily given (see Rev. Am. Birds, 404), but the above characters, as entirely peculiar, will serve to establish it.

Species.

COMMON CHARACTERS. A lengthened crest of soft blended feathers. Colors, soft silky brownish becoming more vinaceous anteriorly, and ashy posteriorly above. A black stripe on side of head, from nasal feathers across lores through the eye and behind it beneath crest, and a patch of the same on chin, with a white streak between them, on side of lower jaw.

A. Wing variegated. Lower tail-coverts rufous. Crest much developed. Forehead and side of head bright purplish-rufous. Black patch covering whole throat, and sharply defined. No white line between black of lore, etc., and brown of forehead. Inner webs of primaries tipped narrowly with white.

a. Terminal band of tail red.

A. phœnicopterum.¹ Greater coverts tipped with red, producing a band across the wing. No yellow on tips of primaries. *Hab.* Japan and Eastern Siberia.

b. Terminal band of tail yellow.

A. garrulus. Secondaries and primary coverts tipped with white, forming two broad short bands. Primaries with outer webs tipped with yellow. *Hab.* Arctic regions of both hemispheres; in winter south into northern United States, and along Rocky Mountains as far as Fort Massachusetts, New Mexico.

B. Wings unvariegated. Lower tail-coverts white. Crest moderately developed. Forehead, etc., not different from crest. Chin only black, this fading gradually into the brown of throat. A white line between black of lore, etc., and brown of forehead. Inner webs of primaries not tipped with white.

a. Terminal band of tail yellow.

A. cedrorum. Wing bluish-ashy. *Hab.* Whole of North America, from 52° N., south (in winter?) to Guatemala; Jamaica and Cuba in winter.

Ampelis garrulus, LINN.

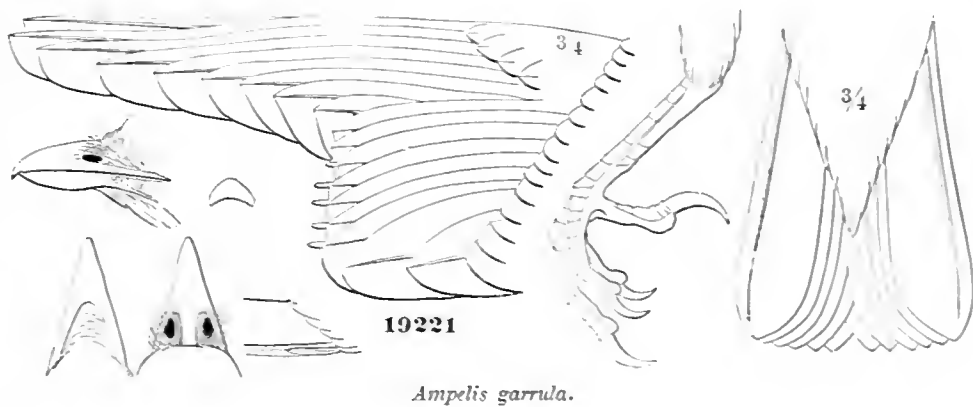
NORTHERN WAXWING; BOHEMIAN CHATTERER.

Lanius garrulus, LINN. "Fænna Succia, 2, no. 82." — *IN*. Syst. Nat. 10th ed. 1758, 95. *Ampelis garrulus*, LINN. Syst. Nat. 12th ed. 1766, 297 (Europe). — BAIRD, Birds N. Am. 1858, 317; Rev. 195. — BOARDMAN, Pr. Bost. Soc. Nat. Hist. IX, 1862, 126 (Cadais, Me.). — COOPER, Pr. Cal. Acad. II, 1861 (1863), 122 (Fort Mohave, Ar.). *Bombicilla garrula*, BON. Zool. Jour. III, 1827, 50. — RICH. — *ART*. Orn. Biog. IV, 462, pl. cccxiii. — *IN*. Birds Am. IV, 169, pl. cccxvi. — MAYNARD, B. E. Mass, 107. — DALL & BASSISTER, 280 (Alaska). — COOPER, Orn. Cal. I, 1870, 127. — SAMUELS, Birds N. Eng. 264. *Bombicilla garrula*, REYS. & BEAS. Wirb. Europas, 1840, 167. — DEGLAND, Ornith. Europ. I, 1849, 349 (European). — WOLFFY, Pr. Z. S. 1857, 55 (nest and eggs). — NEWTON, *Ibis*, 1861, 92, pl. iv (nesting). — NOEDMANN, *Cal. Jour.* VI, 1858, 307, and VII, 1859, pl. i (nesting). (European.)

Other figures: *BON. Am. Orn.* III, pl. xvi.

¹ *Bombicilla phœnicopterum*, TEMM. Pl. Col. II, 1838; pl. 450. The *A. phœnicopterum* is stated by Temminck to have the nasal setae so short as to leave the nostrils exposed, and to lack the sealing-wax appendages; the latter condition may, however, result from the immaturity of the specimen, as it is very common to find the same thing in individuals of the other species.

SP. CHAR. Crest lengthened. Body generally soft, silky brownish-ashy, with a purplish cast, the wing-coverts and scapulars more brownish, becoming more reddish anteriorly and ashy posteriorly; the rump and upper tail-coverts, as well as the secondaries, being nearly pure ash. Anteriorly the color passes gradually into deep vinaceous-chestnut on the forehead to behind the eye and on the cheeks; abdomen yellowish-white. Lower tail-coverts deep chestnut. A stripe on side of the head, covering the lores and nasal feathers (scarcely meeting across the forehead), involving the eye and continued back toward the occiput and beneath the crest, with a large patch covering the chin and throat, deep black; a narrow crescent on lower eyelid, and a short stripe between the black of



Ampelis garrula.

the throat and that of the chin at the base of the lower mandible, two very broad bars on the wing, one across ends of primary coverts, and the other across ends of secondaries (the first occupying both webs, and the latter the outer), white. Primary coverts, primaries, and tail slaty-black, the latter growing gradually ashy basally. A broad band across end of tail, and a longitudinal space along end of outer web of primaries, gamboge-yellow, — the marks on primaries, however, sometimes white, only stained with yellow. Each of the secondaries with an expanded continuation of the shaft, in form of flattened, very thin, somewhat elliptical appendages, of a bright vermilion-red resembling red sealing-wax. *Male* with the white of outer web of primaries continued around end of inner webs also. *Female* without white on terminal edge of inner webs of primaries, and with the "sealing-wax" appendages smaller. *Young* not seen. Length, 7.40; wing, 4.50; tail, 3.00.

HAB. Northern parts of Europe, America, and Asia. In America not hitherto found in the Pacific Province. In winter extending along the Rocky Mountains and the Plains as far south as Fort Massachusetts and Fort Riley; regular visitor to shores of Lake Michigan and Lake Erie. East of this rarely seen along the United States border. Fort Mohave (???) (COOPER).

The specimen seen by Dr. Cooper, at Fort Mohave, if really of this species, fixes the most western locality on record.

For many years authentic eggs of the Bohemian Chatterer were greatly sought after, but it was not until 1856 that any were brought to the notice of the scientific world, when the late Mr. H. Wolley discovered them in Lapland. Early duplicates from his collection were sold at five guineas each, and although a good many have since been obtained, they are yet considered as great prizes. A nest, with its eggs, of those collected by Mr. Wolley, has been presented to the Smithsonian Institution by Mr. Alfred Newton. The only instances on record of their discovery in America are of a nest and one egg by Mr. Kennicott, on the Yukon, in 1861, and a nest and single egg

on the Anderson River, by Mr. MacFarlane, both of which, with the female parents, are in the possession of the Institution. Although there is frequently considerable difference between individuals, there appears to be no difference between those from the two continents.

HABITS. The Waxwing is, in many respects, one of the most interesting and remarkable of the birds of North America. The roving character of its life, the mystery, still only imperfectly solved, of its habits and residence during its breeding-season, and its somewhat cosmopolitan residence in Europe, Asia, and America, impart to it an interest that attaches to but few other species. Though not common in any portions of the United States, and only appearing at all during midwinter, yet in the more northern States, in which it is occasionally found, it moves in such large flocks, and is so noticeable and conspicuous a bird, that it never fails to make a lasting impression, and hardly seems to us so very rare as it undoubtedly is.

In a single instance, in midwinter, somewhere about 1844, during a severe snow-storm, a large flock of these birds made their appearance in Boston, and alighted on a large horse-chestnut tree that stood in an open and retired place. There were at least twenty or thirty in the flock; they remained in their shelter undisturbed for some time, and their true specific character was plainly noticeable.

Several specimens were procured near Worcester, Mass., and given to Dr. Bryant. Eleven individuals of this species were shot in Bolton by Mr. S. Jillson, January, 1864, and others have since been noticed in Watertown by Mr. William Brewster. They have also been obtained near Hartford, Conn., by Dr. Wood.

Prior to this, as Mr. Audubon states, specimens had been procured near Philadelphia, and in the winters of 1830 and 1832 several of these birds were also shot on Long Island.

Mr. Boardman mentions that they are occasional, in winter, near Calais; and Professor Verrill, who did not meet with it in Norway, Me., cites it as accidental and rare in the State.

It is not common in the Arctic regions. Specimens of the bird were obtained on Anderson River, in 1862, by Mr. MacFarlane, but he was not able to find the nest. At Fort Yukon, July 4, Mr. Kennicott met with the nest of this species. The nest, which contained but one egg, was about eighteen feet from the ground, and was built on a side branch of a small spruce that was growing at the outer edge of a clump of thick spruces, on low ground. The nest was large, the base being made of small, dry spruce twigs. Internally it was constructed of fine grass and moose-hair, and lined thickly with large feathers. The female was shot, as she rose from her nest, by Mr. Kennicott's hunter, who had concealed himself near the spot for that purpose. Mr. Kennicott had seen the nest and both parents near it before it was taken, and had thoroughly satisfied himself as to its complete identification.

Ross speaks of them as not rare throughout the district in which they winter, but yet not numerous. He adds that at Great Bear Lake they are very plentiful, and that they are reported to nest there. Mr. Dall states that they were quite common at Nulato, where they did not arrive before June 10, or later. He obtained a number of skins from the Indians, taken in his absence. He adds that it breeds, and its eggs have been obtained at Fort Yukon.

Except in a few instances, where Dr. Cooper noticed this species, in September, at Fort Laramie, and also when he obtained an individual on the Colorado, none of these birds have been seen west of the Rocky Mountains. The bird obtained by Dr. Cooper was, in his opinion, a straggler from some neighboring mountain. It made its appearance January 10, after a period of stormy weather, and was shot while feeding on the berries of the mistletoe.

This bird was first noticed in America, in the spring of 1826, near the sources of the Athabasca River, by Mr. Drummond, and in the same season by Sir John Richardson, at Great Bear Lake, latitude 65°. In the latter region he states that they appeared in flocks about the 24th of May. At that time the spring thaw had exposed the berries of the *Arbutus* and the *Vaccinium*, that had been covered during the winter. It stayed only a few days, and none of the Indians knew where it bred, or had ever seen its nest. Afterwards, early in May, 1827, Sir John Richardson saw a large flock of three or four hundred individuals at Carlton House, on the Saskatchewan. They all alighted in a grove of poplars, on one or two trees, making a loud twittering noise. They stayed only about an hour in the morning, and were too shy to be approached within gunshot.

In England they have been known to appear as early as August. They are always shy, and not easily approached. In their activity and incessant change of position and place, they are said to resemble the Titmice. They feed on the berries of the mountain-ash, the hawthorn, and the ivy. They will also feed on insects, catching them as dexterously as Flycatchers. Their call-note is a single chirp, frequently repeated.

Mr. McCulloch, writing to Mr. Audubon, gives a touching account of the devotion shown by one of these birds to its wounded mate. The latter had been so crippled that it was hardly able to move. Its mate stationed itself on the top of the tree in which it had sought shelter, and with great vehemence continually uttered the notes *tsee-tsee*, in alarm and warning, and, when danger approached, flew against it and urged it on to flight, and stayed to share its fate, rather than leave its partner.

The nest and eggs of this species remained entirely unknown until the spring of 1856, when the late Mr. John Wolley, an enthusiastic English oölogist, first discovered them in Lapland. The season was unusually backward and cold, and the nests contained their full complement by the 12th of June. One of the nests, obtained in Finland, June 19, 1861 (S. I., 5,327),

contained five eggs. It is of remarkable size in proportion to that of its builder, measuring eight inches in diameter. It is flattened in shape, and its cavity, though large, is not deep. The height of the nest is three and a quarter inches, and the depth of the base is fully two and a half inches. The cavity is less than an inch deep, and is four inches in diameter. The base and outer periphery of this nest are of a coarse interlacing of the small ends of branches of fir and spruce trees. Within this is built a close, compact inner nest, chiefly composed of a lichen peculiar to Arctic regions, called tree-hair, which hangs abundantly from the branches of trees in northern forests. It resembles a mass of delicate black rootlets. These are not uncommon ingredients in the nests of northern birds, especially of European. In America, Arctic nests of the *A. carolinensis* are occasionally built of similar materials. With these lichens are also mingled fragments of dry leaves and soft dark-colored mosses. The rim of the nest is strongly made, almost exclusively of these fine dark-colored lichens. This kind of lichen is not always black, but is often brown, and even whitish. In some of these nests silvery fibres of grass-leaves are mingled with the lichens, and in one or two there is a slight lining of feathers.

The Lapland nests were built on the branch of a tree, at a distance from the trunk, and stood up from it unsupported by the surrounding twigs, and at the height of from six to twelve feet from the ground. They were generally much exposed, and were, for the most part, built in the more open portions of the forests. The general number of the eggs was five, in one instance it was six.

The nest from the Yukon, obtained by Mr. Kennicott (S. Coll., 6,326), is smaller, and bears but little resemblance to the European. It is but five inches in diameter, of irregular shape. In height and cavity it nearly corresponds. In place of the lichens of the European, this nest is made of fine grass-stems, strips of bark, and a few feathers.

The eggs of this bird, the gift of Mr. Wolley, measure an inch in length, and from .70 to .67 of an inch in breadth. Their ground-color varies from a light slate to a yellowish stone-color. They are marked, blotched, and dotted with spots of various hues and size. These are chiefly of a dark purple, at times approaching black. Mingled with these are markings of a yellowish-brown. Nearly all these spots are surrounded by a peculiar penumbra, or shading, such as forms so marked a feature in the eggs of the common Cedar-Bird.

The egg obtained by Kennicott on the Yukon is smaller than the European specimen, measuring .90 by .65 of an inch. Its ground is more of a greenish-slate or stone-color, and the spots are of a dark brown, with a deep violet shading.

Ampelis cedrorum, SCL.

SOUTHERN WAXWING; CEDAR-BIRD.

Ampelis garrulus, var. β , LINN. Syst. Nat. I, 1766, 297. *Bombycilla cedrorum*, VIEILLLOT, Ois. Am. Sept. I, 1807, 88, pl. lvii. — LB. Galerie Ois. I, 1834, 186, pl. cxviii. — CAB. Jour. IV, 1856, 3 (Cuba). — GUNDLACH, Cab. Jour. 1861, 328 (Cuba; rare). *Ampelis cedrorum*, SCLATER, P. Z. S. 1856, 299 (Cordova); 1858, 302 (Oaxaca; January); 1859, 364 (Xalapa; Cordova); 1864, 172 (City of Mexico). — SCLATER & SALVIN, Ibis, 1859, 13 (Guatemala). — BAIRD, Birds N. Am. 1858, 318; Rev. 407. — TAYLOR, Ibis, 1860, 111 (Honduras). — MARCH, Pr. A. N. Sc. Phila. 1863, 294 (Jamaica). — LORD, Pr. R. Art. Inst. Woolwich, IV, 116 (British Columbia; nesting). — COOPER & SUCKLEY, P. R. Rep. XII, II, 187 (Washington Ter.). — COOPER, Orn. Cal. I, 1870, 129. — SAMUELS, Birds N. Eng. 265. *Ampelis americana*, WILS. Am. Orn. I, 1808, 107, pl. vii. *Bombycilla americana*, JONES, Nat. Bermuda, 1859, 29 (winter). — RICH. *Bombycilla carolinensis*, BRISSON, Orn. II, 1760, 337 (not binomial). — AUD. Orn. Biog. I, 1831, 227, pl. xliii. — LB. Birds Am. IV, 1842, 165, pl. ccxlv. — WAGLER. *Ampelis carolinensis*, GOSSE, Birds Jamaica, 1847, 197 (January). — BON.

SP. CHAR. Crest moderate. General color soft vinaceous-cinnamon, deepest anteriorly, more olivaceous on back, scapulars and wing-coverts, passing into pure light ash on the rump and upper tail-coverts, and into dingy yellow on flanks and abdomen. Lower tail-coverts white. Whole of the wing posterior to the greater coverts slaty-ash, almost black along end of inner webs of primaries, the outer webs of which are narrowly edged with hoary whitish. Tail slate passing into black terminally, tipped with a broad, sharply defined band of gamboge-yellow. A broad stripe of intense velvety-black on side of head, starting from nostril, passing across lore, and involving the eye, continued from it beneath the crest to the occiput; chin dull black, blending gradually into the brownish of the throat. A narrow white line across the forehead and along side of crown, between brown of crown and black of lore, etc., a narrow crescent on lower eyelid and a stripe between black of lore and that of the throat, white. Male with each secondary quill terminated by a bright red horny appendage to the shaft. Female with these very small and few in number, or entirely absent. Young. In general appearance similar to the adult female. Colors more grayish, with obsolete concealed whitish streaks on nape and down back, these stripes becoming very conspicuous on the sides and flanks and across breast. No black on chin. Rump grayish-brown; abdomen and flanks dingy whitish. No appendages to secondaries, and the yellow band across end of tail narrower than in adult.

HAB. Whole of North America as far north as Lake Winnipeg and Hudson's Bay, south branch of Saskatchewan, latitude $52\frac{1}{2}^{\circ}$ (RICHARDSON); south to Guatemala; Jamaica and Cuba in winter.

A specimen from Guatemala (No. 50,455 ♂) is almost identical with examples from the United States, but differs in having a small spot of yellow at the tip of each primary; also there are red appendages on the tip of a few tail-feathers, as well as the longest feather of the lower tail-coverts. The colors, generally, are softer, the brown more purplish, and the ash finer and more bluish, than in a fine spring male from Washington, D. C.

A specimen (No. 53,396 ♂, Humboldt River, Nevada, September 10, 1868, C. King, R. Ridgway) from the Middle Province of the United States, differs considerably from any other in the collection. The colors are much paler, the anterior portions being almost ochraceous, the whole abdomen

nearly white. The white band across the forehead is very broad; the extreme point of the chin only black. Whether it is a representative of a style peculiar to the Great Basin, or merely a bleached individual, cannot be decided without additional specimens from the same region.

There is so much variation in different specimens in regard to the red wax-like appendages, that the Guatemalan specimen mentioned above can hardly be considered as more than a very highly developed individual.

HABITS. The habits of the common Cedar-Bird are eminently nomadic, and, so far as those of the Waxwing are known, correspond in all respects, except in the more general and especially the more southern distribution of the present species. They are found throughout North America at least so far as the wooded country extends, and they breed from Florida to the Red River country. They are a common bird in New England, and would be much more so but that their fondness for cherries and other small fruits, and their indifference to danger, makes them an easy and frequent mark for destruction. Their unpopularity has caused their numbers to be greatly reduced of late years in the thickly settled portions of the country.

In Southern Texas Mr. Dresser found these birds very common during the winter at San Antonio and Eagle Pass, but he observed none later than the middle of April. They were seen in Tamaulipas, by Lieutenant Couch, in March, and afterwards in April at New Leon, Mexico. Sumichrast states that these birds are found everywhere and in great abundance in winter throughout Vera Cruz. They are there known as the *Chinito*, and are highly appreciated by the Mexican epicures. They are equally abundant in northern parts of South America, and also throughout Central America.

In Washington Territory and in Oregon Dr. Cooper speaks of them as less common than in the Atlantic States, and he only met with a few, in single pairs, in the summer. Townsend states that he found them in Oregon, but Dr. Suckley never met with any west of the Rocky Mountains.

In California Dr. Cooper has seen small flocks in winter, as far south as San Diego, feeding on the mistletoe berries. He found their nests at Fort Vancouver, and has no doubt that they also breed in various parts of California.

Mr. Robert Kennicott states, among other memoranda of his route, that, May 31, on an island in Winnipeg River, he saw a large flock of these birds, numbering fifty or more.

With some irregularity as to their appearance, they are found throughout the year in New England, their presence being usually regulated by their food. They are, by preference, eaters of berries and other vegetable food, except in spring and early summer, when they eat insects almost exclusively, feeding upon the larvæ of the spanworm and the canker-worm, and small caterpillars, and supplying these to their young. They also feed their nestlings with various kinds of berries and small fruits, both cultivated and wild. They do not nest until late in June or early in July, and with so much

irregularity that I have found them sitting on their unhatched eggs as late as the 12th of October. They are a greedy bird, feeding voraciously where they have an opportunity. They are very much attached to each other and to their offspring. Once, when one had been taken in a net spread over strawberries, its mate refused to leave it, suffered itself to be taken by the hand, in its anxiety to free its mate, and when set at liberty would not leave until its mate had also been released and permitted to go with it. In the summer of 1870 a nestling, hardly half fledged, fell from its nest, and was found injured by its fall, taken into the house, and fed. Whenever exposed in its cage its parents came about it, and supplied it with cherries and other fruit, unmindful of the near presence of the family. The young bird lived, and became perfectly tame, feeding from the hand, and preferring to be fed rather than feed itself. Besides its low lisping call, this bird had a regular faint attempt at a song of several low notes, uttered in so low a tone that it would be almost inaudible at even a short distance. It became perfectly contented in confinement, and appeared fond of such members of the family as noticed it.

The noticeable feature of the Cedar-Bird, its crest, it has the power to erect or depress at will. In confinement it generally keeps this depressed, only erecting it when excited from any cause, such as alarm, or desire to receive food.

Wilson states that in Pennsylvania they collect in August in large flocks and retire to the mountains, feeding on the fruit of the *Vaccinium uliginosum*, which grows there in great abundance. Later in the season they descend to the lowlands to feed on the berries of the sour-gum and the red-cedar. In confinement they are very fond of apples, bread soaked in milk, and almost any kind of soft food. They are also very fond of flies, and are expert flycatchers, snapping at all that venture within the cage.

In their migrations their flight is graceful, easy, and continued, and is performed at a considerable height.

It is unfortunate for the horticulturist that this bird has done so much to merit his prejudices and reprobation, and that he does not appreciate to the full the immense services it renders to him each spring in the destruction of injurious insects. A flock of these birds will, in a short space of time, devour an immense number of the larvæ of the destructive canker-worms (*Phalænæ*) that infest the apples and elms of Massachusetts, and, if permitted, would soon greatly reduce their numbers. But these prejudices cannot be softened by their good deeds, and the Cherry-Bird is still hunted and destroyed.

Their nests are usually constructed late in June or early in July, and are placed in various positions, sometimes in a low bush or tree not more than three or four feet from the ground, and rarely more than twenty. Their nests are large and bulky, but strongly made of various materials. Generally they build a strong external framework, six or seven inches in diameter,

composed of the ends of twigs, coarse stems of vegetables, and grasses. Within this they build a compact, well-made fabric of grasses, grapevine bark, and other finer substances, lining the whole with leaves and fine root-fibres. The cavity is large and deep for the bird. The parents are fourteen days in incubating before the young are hatched out, and all this while are remarkably silent, hardly uttering a sound, even their faintest lisping note, when the nest is meddled with, though they evince great anxiety by their fearless indifference to their own danger.

The eggs, usually five, sometimes six, in number, have a marked resemblance to those of the Waxwing, but are smaller. Their ground-color varies from a light slate-color to a deep shade of stone-color, tinged with olive. These are marked with blotches of a dark purplish-brown, almost black, lighter shades of a dark purple, and penumbra of faint purple, sometimes by themselves or surrounding and continuing the darker spots. They vary in length from .80 to .88 of an inch, and average about .85. In breadth they are from .60 to .70 of an inch, and in shape they differ also from an oblong-oval to one of a quite rounded form.

Nests of these birds from the Arctic regions are more elaborately built and more warmly lined, being often largely made up of the fine dark-colored lichens that cover the forest trees of those regions.

SUBFAMILY PTILOGONATINÆ.

CHAR. Legs moderate. Nostrils oval, with wide naked membrane above and to some extent behind them; the frontal feathers not reaching to their border, and rather soft. Wings graduated, shorter than the somewhat broad, fan-shaped tail; the first quill nearly half the second. Adults plain.

Although we find it convenient for the present to retain the genera *Ptilogonys* and *Myiadestes* in the same subfamily, there seems little doubt that they belong to very different families, the latter being more properly placed in *Turdida*, as shown in Rev. Am. Birds. It is not necessary that the subject be discussed here, however, and we merely give the diagnosis of the two groups of which these genera are the types respectively:—

Ptilogonateæ. Tarsi scutellate anteriorly; not longer than middle toe and claw.

Myiadesteæ. Tarsi with a continuous plate anteriorly; longer than middle toe and claw.

SECTION PTILOGONATEÆ.

CHAR. Tarsus stout, shorter, or not longer than the middle toe and claw; conspicuously scutellate anteriorly, and frequently on one or other or on both sides; sometimes with a row of small plates behind. Wings much graduated; the second quill not longer than secondaries. Outline of lateral tail-feathers parallel or widening from base to near tip. Tail unvaried, or else inornate at end. Quills without light patch at base. Head crested. Young birds not spotted. Not conspicuous for song.

There are two genera of this section having in brief the following characters:—

Crest narrow, pointed, its feathers stiff, their webs compact; outer primaries broad. Tail rounded *Phænopepla*.
Crest broad, decumbent, soft, the feathers loose; outer primaries attenuated.
Tail even or cuneate *Ptilogonys*.

The genus *Ptilogonys* has two species, one Mexican, the other Costarican, neither coming within the limits of the United States. The type is *P. cinereus*, SWAINSON (BAIRD, Rev. Am. Birds, 412), a species of the tablelands of Mexico, which may yet be found within the southern borders of the United States in New Mexico or Arizona.

GENUS **PHÆNOPEPLA**, SCLATER.

Phænopepla, SCLATER, P. Z. S. 1858, 543. (Type, *Ptilogonys nitens*, SWAINS.)

GEN. CHAR. Crest narrow, pointed behind. Outer primaries broad, not attenuated nor pointed at end; the first half the second. Tail rounded, fan-shaped; feathers very broad, wider towards end. Bill feeble, rather narrow, well bristled; nostrils somewhat overhung by frontal feathers. Sexes dissimilar; male black; quills with median white patch on inner webs; tail not varied.

The single known species is glossy black in the male; the female brownish-ash.

Phænopepla nitens, SCLATER.

SHINING-CRESTED FLYCATCHER.

Ptilogonys nitens, Sw. An. in Menag. 1838, 285. — BON. Consp. 1850, 335. — HEERMANN, Jour. A. N. Sc. Phila. II, 1853, 263. — CASSIN, Ill. Birds Texas, etc. 1854, 169, pl. xxix. *Cichlopsis nitens*, BAIRD, Birds N. Am. 1858, 320, 923. *Phænopepla nitens*, SCLATER, P. Z. S. 1858, 543; 1864, 173 (City of Mexico). — BAIRD, Rev. Am. B. 1864, 416. — COOPER, Orn. Cal. I, 1870, 131. "*Lepturus galeatus*, LESS."

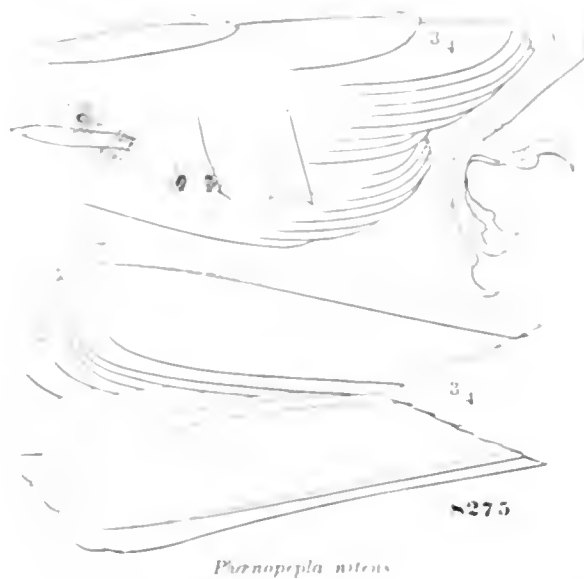
SP. CHAR. (No. 8,275 ♂.) Tail broad, almost fan-shaped; graduated slightly; not at all emarginate, and longer than wing. First quill broad, slightly falcate, scarcely attenuated; more than half the second, which about equals the tenth; sixth longest; third equal to seventh. Feathers on nape rather full, with a lengthened, pointed, narrow, occipital crest.

Male (No. 8,275) entirely glossy greenish-black; the inner webs of all the primary quills with a large, lengthened patch of white, which does not reach the inner margin; their outer webs very narrowly edged with ashy, as are also lateral tail-feathers externally.

Female (No. 8,274) brownish-ash, paler below; the white of inner webs of quills obsolete; the greater coverts and quills edged externally with whitish, the anal and crissal feathers edged and tipped with the same; the outer tail-feather with narrow edge of white externally towards end.

Immature birds show every gradation of color between the two extremes described above.

Total length, 7.00; wing, 3.80; tail, 4.35; length of bill from forehead, .46, from nostril .31, along gape, .66; tarsus, .70; middle toe and claw, .65.



Phainopepla nitens

HAB. Mountainous region of the southern portions of Western and Middle Provinces of United States, and south to Orizaba; Cape St. Lucas; Plateau of Mexico (resident, St MICHAEL).

HABITS. So far as known, this bird occurs in the mountainous portions of the United States, from Fort Tejon, Cal. to Mexico, and from the Rio Grande to San Diego. It is closely allied, in its appearance, as also in many of its habits, both with the Waxwings and the Flycatchers.

This species was first detected within the United States by Colonel McCall, who obtained it in California in 1852. Its habits, as he observed them, partook of those of the true Flycatcher. They are said to be remarkable for their slender, active form, in which their long and ample tail, and the elongated feathers of their head, capable of being erected into a crest, are conspicuous features. Colonel McCall first met with them in a clump of trees on the borders of a mountain brook, between Vallecita and El Chino. A number of them were together actively engaged in the pursuit of insects. They were light and graceful on the wing, though less swift and decided in their motions than the true Flycatchers. In these evolutions the bright white spot on the wing, visible only when the wing is spread, was quite conspicuous, and in fine contrast with the glossy black of the general plumage. In his journey Colonel McCall afterwards met this bird several times, either in small companies or singly. They were always either on mountain sides, or in the timbered borders of mountain streams.

Dr Henry met with this species near the Little Lagoon, on the Colorado Desert. It was perched on a mezquite-tree, jerking its tail almost incessantly, as do other kinds of Flycatchers, and, from time to time, dashing in irregular curves high into the air in pursuit of insects. It became quite abundant as he approached the Colorado, occurring in companies of twenty and thirty. At Fort Yuma he also met with them in considerable numbers late in November, as they were



Phainopepla nitens

migrating southward. Dr. Henry describes its note as a low, plaintive whistle. He ascertained that it breeds in California by finding specimens of young birds. He likewise met with this species near Fort Webster, in New Mexico; and Dr. Kennerly also noticed it, in February and March, between Big Sandy Creek and the Colorado River.

Mr. Dresser obtained two specimens of this species at Eagle Pass. One of these had its stomach filled with the berries of a species of mistletoe that grows abundantly on the mezquite-trees. He noticed that it carries its crest erect and much recurved, after the manner of the European *Parus cristatus*.

Sumichrast states that this species, called *Reyecito*, is well distributed throughout the Plateau of Mexico, but only ranges in the valley of the Orizaba, to the height of about 1,500 metres, rarely coming as far as that. It is also common at Tehautepec and other places.

Dr. Cooper found them quite numerous, in winter, near the Colorado. He also found them common, in December, about the Mohave River, and in summer, from Los Angeles to San Diego. They were found to prefer the trees in which the mistletoe grows, on the berries of which they largely feed, though they occasionally pursue insects in a zigzag course similar to that of the *Sayornis nigricans*.

They almost constantly utter a loud cry of alarm, and when pursued are very wild. When wounded, they conceal themselves so closely in the thick tufts of the mistletoe as to be found with difficulty. Many left the Colorado Valley in April, but a few remained. Their notes Dr. Cooper describes as similar to those of the Crested Flycatchers, but sweeter.

It was found by Feilner, at Fort Crook, in April, 1860, but has not been met with near the coast so far to the north.

A nest of this bird, obtained by Dr. Cooper, on the 27th of April, was built on a horizontal branch of the mezquite (*Algarobia*), twelve feet from the ground. It was found near Fort Mohave, on the Colorado River. The nest is a very flat structure, four inches in diameter, and less than two in height. The cavity is less than an inch in depth. The nest is made almost entirely of hempen or flax-like fibres of plants, interwoven with fine grasses, stems of plants, and stalks of a larger size. It is lined with a soft downy substance of a vegetable character.

The eggs, two in number, are of an oblong-oval shape, nearly equal at either end, and with a ground-color of a light slate, tinged with a yellowish-green. They are marked and blotched equally over the entire egg, with spots and blotches of various lines, from a light, faint, obscure purple to deeper tints of purplish-brown, even to black. It is a very marked egg, and unique in its appearance. They measure .90 by .60 of an inch.

Dr. Coues found this species a summer resident in Arizona, somewhat rare about Fort Whipple, but found very abundantly a little farther south, and a permanent resident in the southern portions of that Territory. It inhabits rather open country in preference to densely wooded regions. He

describes it as a shy, wild, and restless bird, with a superb song, powerful and finely modulated. Dr. Coues appears to think that this species has but little affinity with the forms with which it is usually grouped.

SECTION MYIADESTÆ.

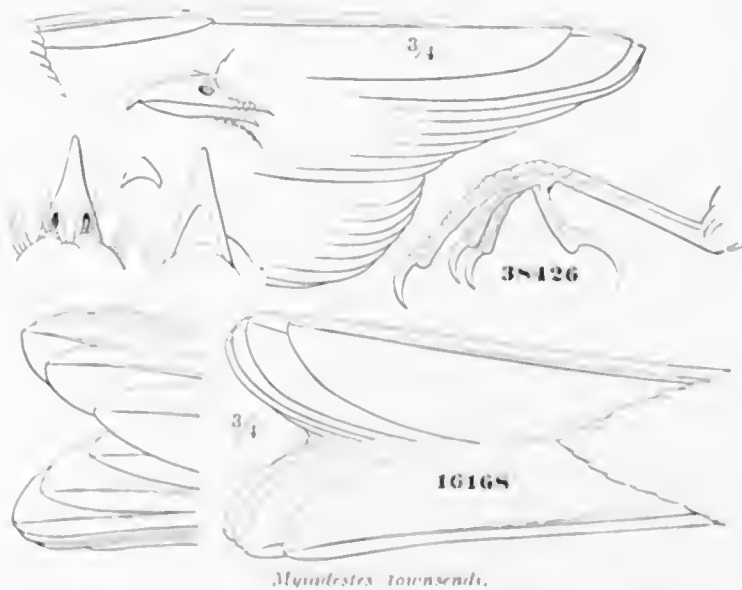
CHAR. Tarsus slender, longer than middle toe and claw; undivided as in *Turdida*. Toes deeply cleft. Wings more pointed; second quill much longer than secondaries. Lateral tail-feathers cuneate, or narrowing from base towards tip; generally whitish at end of inner web. Quills with their extreme bases, especially of inner webs, buffy yellow, showing a light patch inside. Head not crested, though the feathers sometimes full. In the young all the feathers with light rounded spots. Pre-eminent as melodious singers.

But a single genus of this group belongs to the United States, although two others (*Cichlopsis* and *Platyrrhina*?) occur in South America. As already stated, the affinities of *Myiadestæ* are much closest to *Turdida*, and this would seem the proper family for it.

GENUS MYIADESTES, SWAINSON.

Myiadestes, SWAINSON, Jard. Nat. Library, XIII. Flycatchers, "1838," 132. (Type, *M. genibarbis*, Sw.)

GEN. CHAR. Occipital feathers full and soft. Plumage rather loose. Bill weak, much depressed. Commissure nearly straight. Hind toe longer than inner lateral. Toes deeply



Myiadestes townsendi.

cleft. Closed wing externally with an exposed light band across the base of the quills, and another nearer the end, separated by a darker one. Tail somewhat graduated on the sides.

Of the ten or more described species of this genus, only one belongs to

the limits of the United States, although several others occupy adjacent territory in Mexico. Several are peculiar to islands of the West Indies.

The only two species closely related to the *M. townsendi* are the *M. unicolor* and *M. obscurus*, which belong to Mexico. They may be distinguished as follows:—

An ochraceous band across base of secondaries and upper primaries, conspicuous on outer surface.

1. *M. townsendi*. Generally dull ashy, paler beneath. Throat and abdomen whitish. *Hab.* Middle and Pacific Provinces of United States only.

No ochraceous on outer webs of secondaries and primaries.

2. *M. obscurus*.¹ Back and wings rusty-olive. Head and beneath ashy, top of head deepest ash. *Hab.* Mountains of Mexico and Guatemala; Tres Marias Islands.

3. *M. unicolor*.² Entirely dark bluish slate-color, lighter beneath. Lores black. *Hab.* Central Mexico and Guatemala.

Myiadestes townsendi, CABAN.

TOWNSEND'S SOLITAIRE.

Ptiliogonys townsendi, AUD. Orn. Biog. V, 1839, 206, pl. cccxix, fig. 2. (For other references see Birds N. Am. 321.)—NEWBERRY, P. R. Rep. VI, Whipple's Rep. Zool. 82. *Culicivora towns.* DE KAY, N. Y. Zool. II, 1844, 110. *Myiadestes towns.* CABANIS, Wieg. Arch. 1847, I, 208. —SCLATER, P. Z. S. 1857, 5; 1858, 97. —BAIRD, Birds N. Am. 1858, 321; Rev. 429. —COOPER & SICKLEY, P. R. Rep. XII, II, 187. —KENNERLY, P. R. Rep. X, Whipple's Rep. 25. —LORD, Pr. R. Art. Inst. Woolwich, IV, 116 (Br. Col.). —COOPER, Orn. Cal. I, 1870, 134.

SP. CHAR. Tail rather deeply forked. Exposed portion of spurious quill less than one third that of the second; fourth quill longest; second a little longer than the sixth. Head not crested. General color bluish-ash, paler beneath; under wing-coverts white. Quills with a brownish-yellow bar at the base of both webs mostly concealed, but showing a little below the greater coverts and alulae: this succeeded by a bar of dusky, and next to it another of brownish-yellow across the outer webs of the central quills only. Tertiaries tipped with white. Tail-feathers dark brown; the middle ones more like the back; the lateral with the outer web and tip, the second with the tip only, white. A white ring round the eye. Length, 8 inches; wing, 4.50; tail, 3.85. (8.234.)

HAB. Mountainous regions of Middle and Western United States. (Not found at Cape St. Lucas nor in Mexico.)

Young birds have a large triangular pale-ochraceous light spot on the end of each feather (rather paler below), bounded externally by a narrow border of blackish; the quill and tail feathers as in the adult.

HABITS. The first specimen of this somewhat remarkable bird was shot by Captain Brothie, at Fort George, Astoria, and presented to Mr. Townsend, and by the latter given to Mr. Audubon. For some time this remained unique,

¹ *Myiadestes obscurus* (LAFRES.), BAIRD, Rev. Am. Birds, 1866, 430. *Hab.* Mountains of Mexico to Guatemala and Tres Marias Islands.

² *Myiadestes unicolor* (SCLATER), BAIRD, Rev. Am. Birds, 1866, 428. *Hab.* Central Mexico and Guatemala.

and the habits of the species unknown. Through the government explorations, however, we have been made more familiar with its habits and peculiarities.

Dr. Newberry, in his report on the Zoology of Lieutenant Williamson's explorations, mentions finding this bird very abundant in the Des Chutes Basin. It did not frequent either dense forests or prairies destitute of trees, but seemed to select surfaces covered with a scattered growth of pine and cedar. His party first met with it at the base of Mount Jefferson, in the cañon of Mpto-ly-as River. In picking his way with infinite difficulty down this gorge, his attention was drawn by its new and attractive song. There



Myiadestes townsendi.

were several of them in the pines and cedars growing on the face of the cliff. He describes its song as clear, full, and melodious, like that of a true *Mimus*. The next day, as he followed down the river, in the bottom of the cañon the deep gorge was filled with a chorus of sweet sounds from thousands of these birds. He describes them as having a habit of sitting on the branch of a tree projecting over a stream, or hanging from some projecting crag, and at times flying out in narrow circles, after insects, precisely in the manner of Flycatchers.

Afterwards, in another cañon, the terraced banks of which were sparsely set with low trees of the Western cedar, he again found these birds quite numerous, and had every opportunity both of hearing and of seeing them, watching them for hours while feeding and singing. They began their songs with the first dawn of day, and at sunrise the valley was perfectly vocal with their music. He describes their song as not greatly varied, but speaks of all their notes as particularly clear and sweet, and with strains of pure gushing melody that were both spontaneous and inspiring. At that time, September 30, they were feeding on the berries of the cedar. They were very shy, and could only be obtained by stratagem.

Dr. Kennerly, in his Report on the birds observed in the explorations under the charge of Lieutenant Whipple, speaks of meeting with these birds in the Rocky Mountains, in the vicinity of the Pueblo of Zuñi, in New Mexico. Thence, westward, he occasionally met with it, and usually in the cedar thickets.

Dr. Suckley mentions, in his Report on the Zoology of Washington Territory, obtaining a specimen of this species at Fort Steilacoom, April 28, 1856. It was very wild and difficult of approach. It was the only specimen obtained, and he considered it accidental west of the Cascade Mountains. Dr. Cooper, in the same Report, speaks of obtaining a specimen near Fort Laramie in October, where it seemed to be not uncommon.

Dr. Cooper, in his *Birds of California*, dwells with much emphasis upon the delightful melody of this species. Having always found them silent, and with habits like the Flycatchers', he was quite unprepared to hear them singing in the Sierra Nevada, and, if he had not obtained the bird, would not have believed that one of this family was capable of singing with such power. Their song, he says, can be compared with nothing uttered by any other bird he has ever heard in the United States; for, he adds, it excels that of the Mocking-Bird in sweetness, besides being entirely original.

He met with only a few of this species among some junipers on the western slope near the summit, in September, 1863. He has always met with them nearly singly. Dr. Henry found them at Fort Webster, New Mexico, in large numbers, both in fall and in winter. Their home, Dr. Cooper thinks, seems to be in the vicinity of the great deserts of the central regions, or the cedar-covered mountains that intersect them.

Dr. Woodhouse obtained several specimens on the Zuñi Mountains in New Mexico, and from there westward found it exceedingly abundant. Its food seemed to be exclusively berries, and chiefly those of the cedar.

Dr. Cones also found these birds rare summer residents in Arizona, and confirms its possession of rare local powers, producing a rich, sweet, and finely modulated song.

Mr. Robert Ridgway, in accompanying Mr. King's party of explorations, writes that he found this curious bird only occasionally, most frequently among the pines of the Sierra Nevada, and only once or twice among the mountains east of that range. In July, 1867, he found a nest of this bird. It was in a deep ravine on the western slope of the Sierras, at an altitude of five thousand feet. It was placed in a cavity of the rocks forming the perpendicular upper bank of a sluice constructed for mining purposes, through which ran the waters of a considerable mountain stream. The nest was about a foot above the water, and was as bulky as that of the *Harporhynchus rufus*, and similarly constructed, being composed almost entirely of sticks. It contained four young. When he approached, the female was much excited, flying before, or running on the ground in the manner of a true Thrush. Mr. Ridgway makes no mention of its song.

Mr. Lord met with these birds only once, and then at Colville, towards the end of November. All the leaves had fallen, the ground was deeply covered with snow, and the cold was intense. His attention was first attracted by hearing a low sweet song, not unlike that of the Song Thrush of Europe, which at that season was a most unusual sound. On looking around he saw about twenty of these birds perched on the top sprays of some white thorn-bushes. In their mode of darting off and returning again they reminded him of a Shrike. He shot six, and could detect no material difference in plumage between males and females. In the stomachs of those he opened were the remains of small coleopterous insects and a few haws.

FAMILY LANIIDÆ. — THE SHRIKES.

CHAR. Bill very powerful, strong, and much compressed, the tip abruptly hooked, deeply notched, and with a prominent tooth behind the notch; both mandibles distinctly notched, the upper with a distinct tooth behind, the lower with the point bent up. Tarsi longer than the middle toe, strongly scutellate. Primaries ten; first primary half the second, or shorter (occasionally wanting). Wings short, rounded; tail long and much graduated. Sides of tarsi with the plates divided on the outside.

Of this family only a single genus is known in North America.

GENUS COLLURIO, VIGORS.

Collurio, VIGORS, PR. Zool. Soc. 1831, 42. (Type, *Lanius excubitor*, L.)

Lanius, AUCT. (not of LINNÆUS, whose type is *L. cristatus*).

Collurio, G. R. GRAY. — BAIRD, Birds N. Am. 1858, 323.

GEN. CHAR. Feathers of forehead stiffened; base of bill, including nostrils, covered by bristly feathers directed forward. Bill



shorter than the head, much compressed, and very powerful. Culmen decurved from base, the mandible abruptly bent down in a powerful hook with an acute lobe near the tip. Tip of lower mandible bent upwards in a hook; the gonys very convex. Rictus with long bristles. Legs stout; the tarsi rather short, and longer than the middle toe; the lateral equal; the claws all very sharp and much curved. Wings rounded; the first primary about half the second, which is equal to the sixth or seventh. Tail

longer than the wings, much graduated, the feathers broad.

But few species of this genus belong to America, and these are confined to the northern portion. For the purpose of more readily identifying the species we present a brief diagnosis, and then furnish descriptions of all (including a European ally) in a single table.

Species.

A. Outer webs of secondaries wholly white for basal half (mostly concealed by coverts, however). Upper eyelid white.

C. *excubitor*.¹ Nasal tufts grayish-white. In other respects, as regards colors, like *excubitoroides*. Wing, 4.20; tail, 4.00; tarsus, .95. Hab. Europe.

¹ *Lanius excubitor*, LINN. Syst. Nat. ed. 10, 94.

B. Outer webs of secondaries black to the base. Upper eyelids black.

a. White crescent on lower eyelid. Beneath with wavy bars of dusky in all stages. Tarsus less than 1.00; wing more than 4.50.

C. borealis. Upper half of nasal tufts white. Black spectacle bordered above the ear-coverts by hoary whitish. Scapulars and upper tail-coverts approaching white. Wing, 4.70; tail, 4.70; tarsus, .93. *Hab.* Arctic America; in winter south into United States, especially into the northern portions.

b. No white crescent on lower eyelid. Beneath without bars, except in young. Tarsus more than 1.00; wing less than 4.50.

C. ludovicianus. Black spectacle not bordered over ear-coverts with whitish.

White patch on primaries reaching nearly as far as end of first quill.
Nasal tufts entirely black.

Black of lores and nasal tufts bordered above with hoary whitish. Tail white at base; inner webs of secondaries paler toward margin, but not abruptly white. Beneath entirely white, without ashy tinge laterally, or across breast. Axillars whitish. Upper tail-coverts ashy-white, scapulars pure white. Wing, 4.10; tail, 4.20; tarsus, 1.10; bill, .50. *Hab.* Western North America from Pacific Coast east to a little beyond the Mississippi, and to Texas. Nearly all of Mexico var. *excubitoroides*.

Black of lores, etc., not bordered above by whitish. Tail black at base. Inner webs of secondaries pure white to the shaft on basal half. Beneath tinged with ashy laterally and across breast. Scapulars and upper tail-coverts hardly different from back. Bill, .60. *Hab.* California and fur countries var. *robustus*.

White patch on primaries reaching only about half-way to end of first quill. Nasal tufts hoary-grayish above.

Black of lores bordered above by hoary-whitish. Tail as in *elegans*, — secondaries as in *excubitoroides*. Beneath very strongly tinged with plumbeous laterally and across breast. Upper tail-coverts like the back, posterior scapulars only inclining to white. Axillars plumbeous. Wing, 3.80; tail, 3.95; tarsus, 1.00; bill, .50. *Hab.* South Atlantic and Gulf States var. *ludovicianus*.

We now proceed to give a more detailed table of these species, and under the heading of each shall omit any further description:—

GENERAL COLOR. Bluish or plumbeous ash above; the outer edges of scapulars, sometimes the forehead and rump, paler. Beneath white, sometimes with waved transverse dark lines. A broad black stripe from side of upper bill through eye (extending more widely beneath than above it, sometimes wanting above) to end of ear-coverts. Wings (except lesser coverts) and tail black; the former with a white patch across base of primaries, sometimes on inner webs of secondaries; the secondaries tipped with white; the tail with broad white tips to the lateral feathers, the concealed bases of which are also usually white.

A. Black check-stripes involving eyelid only on upper border of eye, and not meeting across the forehead. A crescentic patch of white in the black below the eye; upper edge of black stripe behind the eye bordered by hoary whitish. Breast and belly always with distinct, transverse waved lines of dusky. Bill, when mature, entirely black. Length about 10 inches.

Above light ash. Upper tail-coverts and forehead much paler than the back, the former without waved lines. Axillars whitish.

Inner webs of secondaries paler towards edges, but not of well-defined white. Concealed bases of tail-feathers, except sixth, white.

Tarsus shorter than the gape of mouth. Length, 10.00; extent,

14.50; wing, 4.70; tail, 4.70; bill above, .85; tarsus, .93 *borealis*

B. Black check-stripes not involving upper border of eye or upper eyelid, which is whitish, and not meeting across the forehead, its upper edge behind the eye with scarcely a lighter border. No patch of white on lower eyelid. Under parts unvaried white; in female obscurely waved. Base of under mandible whitish. Length about 9 inches.

Above light ash. Upper tail-coverts and forehead decidedly paler than the back. Axillars whitish.

Inner webs of all secondaries (except innermost) white to shaft, except for less than terminal half, which is black along the shaft.

Concealed base of tail white, except on sixth feather. Tarsus equal to the gape *eximior.*

C. Black check-stripes involving upper eyelid, as in **A**, but without patch of white below the eye; meeting in a narrow, sometimes inconspicuous, line across the forehead, its upper edge behind the eye not bordered by lighter. Beneath plain white, or very obscurely waved in *ludovicianus* (the female?). Bill, when mature, entirely black. Length about 8.50 inches.

Above dark plumbeous-ash. Upper tail-coverts and forehead scarcely paler than the back. Sides and breast tinged with bluish-gray.

Black of loreal space rather hoary along upper border. Frontal dark line inappreciable or wanting. Inner webs of secondaries paler only along the marginal half, and not abruptly white. Axillars plumbeous. Tail-feathers, except the innermost, with a concealed well-defined white patch at base, largest on the more exterior one. Bill from nostril, .50. Under parts often with very obscure faint waved lines (in the female?). White patch on wing reaching about to middle of first primary. Tarsus equal to the gape. Length, 8.50; wing, 3.72; tail, 4.10; bill above, .82; tarsus, 1.00 *ludovicianus.*

Black of loreal space without any lightening above it. Frontal black band well marked. Inner webs of secondaries (except innermost) pure white to shaft, except along rather more than terminal half, where the shaft is bordered by black. Axillars whitish. Tail-feathers black to base, except the loose fibres, which are grayish. Bill from nostril, .60. Under parts without waved lines. White patch on wing reaching nearly opposite to end of first primary. Tarsus about equal to the gape. Length, 8.75; wing, 4.20; tail, 4.40; bill above, 1.00; tarsus, 1.20 *elegans.*

Above light ash-color. Upper tail-coverts and forehead much lighter than the back, the former sometimes almost white. Sides and breast generally nearly pure white.

Black of loreal space with conspicuous hoary margin above it. Inner web of secondaries much as in *C. ludovicianus*. Axillars whitish. Tail-feathers with concealed white patch at bases of all the feathers. Bill from nostril about .50. No waved lines beneath. White patch on wing reaching nearly opposite to end of first primary. Tarsus longer than the gape. Length, 8.50; wing, 4.05; tail, 4.25; bill above, .83; tarsus, 1.12 *excubitoroides.*

Collurio borealis, BAIRD.**GREAT NORTHERN SHRIKE, OR BUTCHER-BIRD.**

Lanius borealis, VIEILLOT, Ois. Am. Sept. 1, 1807, 90, pl. 1. — SW. — AUD. SYN. — IB. Birds Am. IV, 1842, 130, pl. cccxxvi. — CASSIN. — MAX. Cab. Jour. VI, 1858, 190 (Upper Missouri). — JONES, Nat. Bermuda, 1857, 51 (Bermuda). — DRESSER & SHARPE, P. Z. S. 1870, 590. *Collyrio borealis*, BAIRD, Birds N. Am. 1858, 324. — COOPER & SUCKLEY, P. R. Rep. XII, II, 1860, 188 (Washington Territory). — DALL & BANNISTER, 280 (Alaska). — SAMUELS, Birds N. Eng. 268. *Collurio borealis*, BAIRD, Rev. Am. B. 1864, 440. *Lanius excubitor*, FORSTER, Phil. Trans. LXII, 1772, 382 (not of LINNÆUS). — WILSON, I, 1808, 74, pl. v, fig. 1. *Lanius septentrionalis*, BON. SYN. 1828, 72 (not of GMELIN, which cannot be identified as an American species). — COOPER, Orn. Cal. I, 1870, 137. — CASSIN, Pr. A. N. Sc. 1857, 213. — MURRAY, Ed. New Phil. Jour. XI, 1859, 223 (H. B. T.).

HAB. Whole of America north of United States; in winter south to Washington. St. Louis, Prescott (Arizona), and North California: Bermuda (winter, JONES).

The description of this and the succeeding species will be found on page 413. In winter, the colors, especially of the immature birds, are quite different from those described. The plumage of the adult, in winter, differs from that of spring as follows: the lores and nasal tufts are whitish, instead of pure, sharply defined black, with, however, some of the hair-like fibres blackish. The ash above is a little less clear, the white beneath less pure; the under mandible whitish at the base. An immature bird, in winter, has the ash above overlaid by a wash of reddish-brown, producing a prevailing uniform light-brown tint; the black on side of head is reduced to an obsolete patch on the ear-coverts. The dull white beneath is everywhere — sometimes even on the lower tail-coverts — covered with numerous bars of dusky, more sharply defined, and darker than in the adult.



Collyrio excubitoroides.

Eastern specimens appear to have as much white on the rump as Western ones.

HABITS. In the breeding-season this species of Shrike is found in all North America north of the United States, and is said to breed also within our territory, in mountainous districts. Such, at least, is the statement of Mr. Audubon, and Wilson leaves us to infer the same thing by giving a minute description of its nest and eggs. But Audubon may have confounded this species with the *excubitoroides*, and Wilson, apparently believing our species and the *excubitor* of Europe to be identical, may have had the

nest and eggs of the European bird in view in his description. We know of a single recent instance in which this bird has bred within the limits of the United States, though it may breed in Northern and Eastern Maine. Mr. Boardman spoke of it as common only in winter, near Calais, but he has since met with its nest in New Brunswick, within twelve miles of St. Stephen. It was supposed by his informant to be the nest of the Canada Jay, but proved, on shooting the parent, to be that of the Northern Shrike. When found, it contained four eggs, but these had hatched out before it was secured. The nest was found on the last of April, and was built in a low spruce-tree. Mr. Boardman has since seen these birds in his neighborhood during the summer. Professor Verrill thinks it is only common in the autumn and winter in Western Maine. In Western Massachusetts, Mr. Allen cites it as not very common, but a regular winter visitant, from the last of October to the middle of April.

Mr. Ridgway met with it frequently in the neighborhood of Carson City during the winter, among the willows bordering the streams that flow from the mountains. Dr. Coues also found it as far south as Arizona, though Mr. Dresser did not meet with any in Texas, nor did Dr. Woodhouse notice any in his expedition to the Zuñi. Captain Feilner found this species common, in the colder months, in the northeastern portions of California, and Dr. Cooper gives it as abundant at the Columbia River in October.

Mr. Audubon further states that in severe winters he has met with it as far south as Natchez on the Mississippi. It is also not uncommon in Kentucky during the same season, but he never met with it near the seaboard.

Mr. Kennicott's memoranda in reference to this species are to the effect that he observed one individual at Fort Simpson, September 23, and again October 22, but on no other occasion. Both of these specimens, when first observed, were singing. Their notes, he states, were low and irregular, but were varied and quite musical. Captain Blakiston found these birds winter residents on the Saskatchewan.

In the fall and winter of 1871, a pair of these birds was attracted to the Common, in Boston, by the large number of half-domesticated European Sparrows. For a while they made daily inroads upon these favorites, killing one or more for several days in succession. They appeared to keep themselves secreted most of the time, showing themselves each day early in the forenoon, and pouncing upon their victims, unaware of their near presence, in the manner of a Hawk, aiming always at the heads, which were torn off and devoured; generally the headless remains were left uneaten. In one instance where a Sparrow had been struck on the back, an ugly wound was made, the bird escaped alive, and was soon after seen, in the middle of Tremont Street, apparently not seriously injured. These Shrikes were so bold and destructive that pains had to be taken to watch for and shoot them. Three were killed, on different days, and each with a dead Sparrow in its claws, upon which it was feasting when shot.

Both Mr. Audubon and Mr. Nuttall refer to this Shrike's imitating the cries of other birds, apparently to decoy them within its reach. The former has heard it utter cries like those of the Sparrow screaming in the claws of a Hawk, to induce them to come out of their coverts and rescue their suffering fellows, and has seen them dart suddenly into a thicket in pursuit of one, from which would soon issue the real cries of the bird it had seized. Nuttall states that in some parts of New England this Shrike is called a Mocking-Bird, on account of its imitations of the notes of smaller birds. Its more usual note resembles the discordant creaking of a signboard hinge. He also states that it has been known to mimic the quacking of ducks, so that these would answer to it as to a decoy. He heard one of these birds, as late as November 10, uttering a low and soft warble, resembling that of the Song Sparrow, immediately after changing it to the notes of the Catbird.

When in pursuit of small birds, it will dart down with closed wings, in the manner of a Hawk, and seldom fails to obtain the object of its pursuit, following it with rapidity and pertinacity through the thickets in which it seeks shelter. When it seizes its prey, it alights on its back, and tears open its head.

Its bold audacity and perseverance are quite remarkable, and are often displayed, in the fall, in the manner in which it will enter an apartment through an open window and attack a Canary, even in the presence of members of the family. It rarely fails, if it gains access to the cage, to destroy its inmate before the latter can be rescued by the intervention of those present, and only by great promptness in sheltering the cage. In one instance the writer was sitting at a closed window reading, with a Canary hanging above him. Suddenly there was a severe blow struck at the pane of glass near the cage, and the frightened Canary uttered cries of alarm and fell to the bottom of its cage. The cause was soon explained. A Shrike had dashed upon the bird, unconscious of the intervening glass, and was stretched upon the snow under the window, stunned by the blow. He revived when taken up, and lived several days, was sullen, but tame, and utterly devoid of fear. He refused raw meat, but eagerly tore in pieces and devoured small birds when given to him. His tameness and indifference to our presence may have been occasioned by stupor arising from his injury. In another case a Shrike made a similar attack, but escaped unharmed, and though he remained about the house several days, was too wary to allow himself to be decoyed within gunshot.

A nest of the Northern Shrike, containing six eggs, was obtained by R. R. McFarlane, at Anderson River Fort, June 11, 1863. This is in many respects in striking contrast with the nests of its kindred species of the Southern States, far exceeding them in its relative size, in elaborate finish and warmth. It is altogether a remarkable example of what are known as felted nests, where various materials are most elaborately worked together into a homogeneous and symmetrical whole. It is seven inches in diameter

and three and a half in height. The cavity is proportionately large and deep, having a diameter of four and a half inches, and a depth of two. Except the base, which is composed of a few twigs and stalks of coarser plants, the nest is made entirely of warm and soft materials, most elaborately interworked together. These materials are feathers from various birds, fine down of the Eider and other ducks, fine mosses and lichens, slender stems, grasses, etc., and are skilfully and artistically wrought into a beautiful and symmetrical nest, strengthened by the interposition of a few slender twigs and stems without affecting the general felt-like character of the whole. The egg measures 1.10 inches by .80, and is of a light greenish ground, marbled and streaked with blotches of obscure-purple, clay-color, and rufous-brown.

Sir John Richardson found this a by no means uncommon bird in the woody districts, at least as far as the sixteenth parallel. On account of its resemblance to the Canada Jay, the Indians called it the "White Whiskey-John." It remains all winter in the fur regions, but is much more numerous in summer. He states that the nest is built in the fork of a tree, of dry grass and lichens neatly intertwined, and lined with feathers.

Collurio ludovicianus, BAIRD.

SOUTHERN SHRIKE; LOGGERHEAD.

Lanius ludovicianus, Linn. Syst. Nat. 1766, 134 (based on *Lanius ludovicianus*, Brisson, II, 162, tab. xv, fig. 2.) — Aud. Orn. Biog. I, 1831, 300, pl. xxxvii. — Ib. Birds Am. IV, pl. cccxxvii. — Cassin, Pr. A. N. Sc. 1857, 213. *Collurio ludovicianus*, BAIRD, Birds N. Am. 1858, 325. *Collurio ludov.* BAIRD, Rev. Am. B. 1864, 443. *Lanius ardosiacus*, Vieillot, Ois. Am. Sept. I, 1807, 81, pl. li. *Lanius carolinensis*, Wils. Am. Orn. III, 1811, 57, pl. xxii, fig. 5.

HAB. South Atlantic (and Gulf?) States.

The young bird is quite different from the adult, differing as does that of *excubitoroides*, but the colors are all darker than in the corresponding age of that species.

HABITS. This species, if we regard it as distinct from the *excubitoroides*, has apparently a very restricted distribution, being confined to the South Atlantic and Gulf States. I am not aware that it has been found farther north than North Carolina. It is not common, according to Audubon, either in Louisiana or Mississippi, and probably only occurs there in the winter. I have had its eggs from South Carolina, Georgia, and Florida. Dresser speaks of this Shrike as common in Texas in summer, and Dr. Woodhouse states that he found it very abundant in Texas and the Indian Territory. These observations may probably apply to the kindred race, *excubitoroides*, and not to this form.

It is said to be exclusively a bird of the lowlands, and never to be met with in the mountainous parts, even of its restricted habitat.

Dr. Coues found this species very common in the neighborhood of Columbia, S. C., frequenting the wooded streets and waste fields of that city. On one occasion he observed a Loggerhead busily foraging for insects in the grounds of the Capitol. From the top of a tall bush it would occasionally sally out, capture a large grasshopper, and carry it to a tree near by, full of sharp twigs. It would then proceed to impale the insect on one of these points, remain awhile watching the result of its performance, and then resume its post on the bush, watching for more grasshoppers, some of which, one by one, it caught and impaled in like manner, others it ate on the spot.

This curious habit of impaling insects, more or less common to the entire family of Shrikes, seems to admit of no satisfactory explanation. In this case the bird thus secured them when apparently hungry, eating some and impaling others. Yet, so far as I know, it never makes any use of those it thus impales.

Mr. Audubon states that in South Carolina it is quite common along the fences and hedges about the rice plantations at all seasons, and that it renders good service to the planters in the destruction of field-mice, as well as of many of the larger insects. He speaks of its song as consisting only of shrill, clear, creaking, prolonged notes, resembling the grating of a rusty hinge. His account differs, in many respects, from the more minute and exact descriptions of Rev. Dr. Bachman. In pursuing its prey, he states that it invariably strikes it with its bill before seizing it with its claws.

In reference to its song, Dr. Bachman states that it has other notes besides the grating sound mentioned by Audubon. During the breeding-season, and nearly all the summer, the male bird posts itself at the top of some tree and makes an effort at a song, which he compares to the first attempts of a young Brown Thrush. This is a labored effort, and at times the notes are not unpleasing, but very irregular.

Dr. Bachman also claims that the male evinces marked evidences of attachment to his mate, carrying to her, every now and then, a grasshopper or a cricket, and driving away hawk or crow as they approach the nest.

He also states that he has usually found the nest on the outer limbs of trees, often from fifteen to thirty feet from the ground, and only once on a bush so low as ten feet from the ground. He has occasionally seen these birds feeding on mice, and also on birds that had been apparently wounded by the sportsman. It will sometimes catch young birds and devour them, but its food consists chiefly of grasshoppers, crickets, coleopterous and other insects, including butterflies and moths, which it will pursue and capture on the wing. Dr. Bachman has observed its habit of pinning insects on thorns. In one instance he saw it occupy itself for hours in sticking up, in this way, small fishes thrown on the shore, but he has never known them to devour anything thus impaled.

This Shrike is partially migratory in South Carolina, as a few may be found all winter, but only one tenth of those seen in summer. It is also

very fond of the little changeable green lizard, which it pursues with great skill and activity, but not always with success.

It is said also to breed twice in a season. Dr. Bachman describes their eggs as white, and Mr. Audubon speaks of them as greenish-white. Neither make any reference to their spots.

All the nests that I have ever seen of this species, in the simplicity of their structure and in their lack of elaboration, are in remarkable contrast with the nests of both the *borealis* and the *excubitoroides*. They are flat, shallow structures, with a height of about two inches and a diameter of five. They are made externally of long soft strips of the inner bark of the bass-wood, strengthened on the sides with a few dry twigs, stems, and roots. Within, it is lined with fine grasses and stems of herbaceous plants.

The eggs, often six in number, are in length from 1.02 to 1.08 inches, and from .72 to .78 of an inch in breadth; their ground-color is a yellowish or clayey-white, blotched and marbled with dashes, more or less confluent, of obscure purple, light brown, and a purplish-gray. The spots are usually larger and more scattered than in the eggs of *C. borealis*, and the ground-color is a yellowish and not a bluish white, as in the eggs of *C. excubitoroides*.

Collurio ludovicianus, var. *robustus*, BAIRD.

WHITE-WINGED SHRIKE.

!! *Lanius elegans*, Sw. F. B. A. 11, 1831, 122. — NUTTALL, Man. 1, 1840, 287. — CASSIN, Pr. A. N. Sc. 1857, 213. — BAIRD, Birds N. Am. 1858, 327. *Collurio elegans*, BAIRD, Birds N. Am. 1858, 328. *Collurio elegans*, BAIRD, Rev. Am. B. 1864, 444. — COOPER, Orn. Cal. 1, 1870, 140. (According to DRESSER & SHARPE, P. Z. S. 1870, 595, who have examined the type, the *L. elegans* of Swainson is the same as *L. lahtora*, SYKES, of Siberia.)

HAB. California?

The description already given is taken from a specimen in the collection of the Philadelphia Academy, labelled as having been collected in California by Dr. Gambel, and is very decidedly different from any of the recognized North American species. Of nearly the size of *C. excubitoroides* and *ludovicianus*, it has a bill even more powerful than that of *C. borealis*. In its unwaved under parts and uniform color of the entire upper surface, except scapulars, it differs from *borealis* and *excubitoroides*, and resembles *ludovicianus*. In the extension of white over the inner webs of the secondaries, it closely resembles *C. excubitor*. The great restriction of white at the base of the tail — the four central feathers being entirely black, and the bases of the others grayish-ashy — is quite peculiar to the species.

The specimen in the Philadelphia Academy we originally referred to the *L. elegans* of Swainson, alleged to have come from the far countries, as although some appreciable differences presented themselves, especially in the

coloration of the tail, these were considered as resulting from an imperfect description. Messrs. Sharpe and Dresser, however, as quoted above, show that Swainson's type really belongs to *L. lahtora*, an Old World species. We therefore find it expedient to give a new name to the variety, having no reason to discredit the alleged locality of the specimen.

***Collurio ludovicianus*, var. *excubitoroides*, BAIRD.**

WESTERN LOGGERHEAD; WHITE-RUMPED SHRIKE.

Lanius excubitoroides, SWAINSON, F. B. A. 11, 1831, 115 (Saskatchewan). — GAMBEL, Pr. A. N. Sc. 1847, 200 (Cala.). — CASSIN, Pr. A. N. Sc. 1857, 213. — SCLATER, P. Z. S. 1864, 173 (City of Mexico). *Collyrio excubitoroides*, BAIRD, Birds N. Am. 1858, 327. *Collurio excub.* BAIRD, Rev. Am. B. 1864, 445. — COOPER, Orn. Cal. 1, 1870, 138. ? *Lanius mexicanus*, BREHM, Cab. Jour. 11, 1854, 145. — SCLATER, Catal. 1861, 46 (Mexico). *Lanius ludovicianus*, MAX. Cab. Jour. 1858, 191 (Upper Missouri). — DRESSER & SHARPE, P. Z. S. 1870, 595.

HAB. Western Province of North America, as far north as Oregon; Middle North America, to the Saskatchewan, and east to Wisconsin, Michigan, and Illinois; south to Orizaba and Oaxaca, and City of Mexico; Cape St. Lucas.

The precise boundaries between this species and *C. ludovicianus* are difficult of definition, as the transition is almost insensible.

The young bird is pale fulvous-ash above, everywhere with transverse crescentic bars of dusky. Two bands of mottled pale fulvous across wings, on tips of middle and greater coverts. Tail tipped with ochraceous, the white feathers tinged with the same. Breast and sides with obsolete bars of dusky. Black band on side of head rather obsolete.

In its extreme stage of coloration it differs from *ludovicianus* in paler and purer color; the ash of back lighter; the under parts brilliant white, not decidedly plumbeous on the sides as in the other, and without so great a tendency to the usual obsolete waved lines (noticed distinctly only in winter or immature birds); the axillars bluish-white, not plumbeous. The white of wings and tail is more extended; the hoary of forehead and whitish of scapulars more distinct. The bristles at base of bill somewhat involving the feathers are black, forming a narrow frontal line, not seen in the other. The most striking difference is in the rump and upper tail-coverts, which are always appreciably and abruptly lighter than the back, sometimes white or only faintly glossed with plumbeous; while in typical specimens of *ludovicianus* these feathers are scarcely lighter at all, and generally more or less varied with blackish spots at the end. The legs and tail are apparently longer, the latter less graduated. These differences are, however, most appreciable in specimens from the Middle and Western Provinces. Those from the Western States, east of the Missouri River, as far north as Wisconsin, are more intermediate between the two, although still nearest to the Rocky Mountain bird

as described; the back darker, the rump and axillars more plumbeous, the sides more bluish. There is little doubt that the examination of series from the States along the Mississippi will show a still closer resemblance to typical *C. ludovicianus*, and that the gradation between the two extremes will be found to be continuous and unbroken. It therefore seems reasonable to consider them all as one species, varying with longitude and region according to the usual law,—the more western the lighter, with longer tail. The only alternative is to suppose that two species, originally distinct, have hybridized along the line of junction of their respective provinces, as is certainly sometimes the case. The approximation in many respects of coloration of the Shrikes of the Pacific coast to those of the South Atlantic States is not without its importance in the discussion of the subject. However it may be, it

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is necessary to retain the name of *eccubitoroides*, as representing, whether as species or variety, a peculiar regional form, which must be kept distinctly in mind. The comparatively greater size of the bill in the Cape St. Lucas specimens is seen in other species from this locality (No. 26,438 of adjacent figure).

The intensity of the black front in this species varies considerably, being sometimes very distinct, and again entirely wanting. This may probably be a character of the breeding-season, the dulness of black anterior to the eye and the lighter color of the bill having a close relationship here, as in other species, to maturity, sex, and season.

HABITS. This variety was first described from specimens obtained in the territory of the Hudson's Bay Co. Richardson states that it was not found farther north than the fifty-fourth degree, and there only in the warm and sandy plain of the Saskatchewan. Its manners, he says, are precisely similar to those of the *borcalis*, feeding chiefly on the grasshoppers, which were very numerous on the plains. Mr. Drummond found its nest in the beginning of June, in a bush of willows. It was built of the twigs of the *Artemisia* and dry grass, and lined with feathers. The eggs were six in number, of a pale yellowish-gray color, with many irregular and confluent spots of oil-green, mixed with a few of smoke-gray.

Mr. Ridgway met with it, in his Western explorations, in all localities, but most frequently among the *Artemisia* and in the meadow-tracts of the river valleys. It is also seen on all parts of the mountains, among the cedar groves, localities in which the *ludovicianus* is said never to be found.

Dr. Cooper describes this bird as abundant in all the plains-region of California, but not as far as the Columbia River. South of latitude 38°, they reside all the year. They were abundant about Fort Mohave all winter, and nested as early as the 19th of March in a thorn-bush. They had young early in

April. At San Diego they nested later, about April 20. He speaks of their singing as an attempt at a song, the notes being harsh, like those of a Jay, but not imitative. They catch birds, but do so very rarely, depending upon grasshoppers and other insects.

The nests of the *excubitoroides*, so far as I have had any opportunity to examine them, always exhibit a very marked contrast, in the elaborateness of their structure, to any of the *ludovicianus* that have fallen under my notice. They resemble those of the *borealis* in their size and the felted nature of their walls, but are more coarsely and rudely put together. They have an external diameter of about eight inches, and a height of four. The cavity is also large and deep. These nests are always constructed with much artistic skill and pains. The base is usually a closely impacted mass of fine grasses, lichens, mosses, and leaves, intermingled with stout dry twigs. Upon this is wrought a strong fabric of fine wood-mosses, flaxen fibres of plants, leaves, grasses, fur of quadrupeds, and other substances. Intertwined with these are a sufficient number of slender twigs and stems of plants to give to the whole a remarkable strength and firmness. This is often still further strengthened by an external protection woven of stouter twigs and small ends of branches, stems, etc. The whole is then thoroughly and warmly lined with a soft matting of the fur of several kinds of small animals, vegetable down, and a few feathers.

The eggs, five or six in number, measure 1.00 by .73 of an inch, and strongly resemble those of both the *borealis* and the *ludovicianus*. Their ground-color is pale greenish-white, over which are marks and blotches, more or less confluent, of lilac, purplish-brown, and light umber.

Mr. Ridgway, who is familiar with this bird in Southern Illinois, informs me that in that section it is a resident species, being abundant during the summer and by no means rare in the winter. It is there, strangely enough, often called the Mocking-Bird, its similar appearance and fondness for the same locality leading some persons to confound these very different birds. In districts where the true *Mimus* is not common, young birds of this species are frequently taken from their nests and innocently sold to unsuspecting admirers of that highly appreciated songster.

This bird inhabits, almost exclusively, open situations, being particularly fond of waste fields where young honey-locusts (*Gleditschia triacanthos*) have grown up. Among their thorny branches its nests are almost utterly inaccessible, if beyond the reach of poles. In such localities this bird may often be seen perched in an upright position upon some thorn-bush, or a fence-stake, quietly watching for its prey, remaining nearly an hour at a time motionless except for an occasional movement of the head.

The flight of this bird, Mr. Ridgway adds, is quite peculiar, utterly unlike that of any other bird except the *Oreoscoptes montanus*, which it only slightly resembles. In leaving its perch it sinks nearly to the ground, describing a curve as it descends, and, passing but a few feet above the surface, ascends in

the same manner to the object upon which it is next to light. The flight is performed in an undulating manner, the bird sustaining itself a short time by a rapid fluttering of the wings, and sinking as this motion is suspended. As it flies, the white patch on the wing, with the general appearance of its gray and white plumage, increases its resemblance to the Mocking-Bird.

Though very partial to thorn-trees (honey-locust), other trees having a thick foliage — as those canopied by a tangled mass of wild grapevines — are frequently occupied as nesting-places; while a pair frequently make their home in an apple-orchard, selecting the old untrimmed trees. The situation of the nest varies according to the character of the tree; if in a thorn-bush, it is placed next the trunk, encased within protecting bunches of thorns; but if in an apple-tree, it is situated, generally, near the extremity of a horizontal branch. The number of eggs is generally six, but Mr. Ridgway has several times found seven in one nest. No bird is more intrepid in the defence of its nest than the present one; at such times it loses, apparently, all fear, and becomes almost frenzied with anger, alighting so near that one might grasp it, were he quick enough, and with open mouth and spread wings and tail threatening the intruder, its attacks accompanied by a peculiar crackling noise, interrupted by a harsh, grating *qua, qua, qua*, slowly repeated, but emphatically uttered.

The habit peculiar to the Shrikes of impaling their victims Mr. Ridgway has observed frequently in this species; for this purpose the long and extremely sharp thorns of the honey-locust serve it admirably; and "spitted" upon them he has found shrews, mice, grasshoppers, spiders, and even a Chimney-Swallow (*Chatura pelagica*); and, in another instance, but upon the upright broken-off twig of a dead weed in a field, a large spider. He has also known this bird to dart at the cage of a Canary-Bird, and frighten the poor inmate so that it thrust its head between the wires, when it was immediately torn off by the powerful beak of the Butcher-Bird.

The young of this species becomes a very pleasing and extremely docile pet. Mr. Ridgway has known one which, though fully grown, with power of flight uninjured, and in possession of unrestrained freedom, came to its possessor at his call, and accompanied him through the fields, its attachment being rewarded by frequent "doses" of grasshoppers, caught for it. It had been fully feathered before taken from the nest. Unfortunately the vocal capabilities of this Shrike are not sufficient to allow its becoming a general favorite as a pet; for, although possessing considerable talent for mimicry, it imitates only the rudest sounds, while its own notes, consisting of a grating, sonorous *qua* and a peculiar creaking sound, each with several variations, are anything but delightful.

FAMILY CÆREBIDÆ. — THE CREEPERS.

As already stated on page 177, there is little to distinguish the *Cærebidæ* from the *Sylviolidæ*, except by the longer and more protracted tongue, and by the narrower gape in some of the forms. The genera *Certhiola*, *Cæreba*, *Diglossa*, etc., have peculiarities by which they are easily recognized; but when we come to such members as *Dacnis*, *Conirostrum*, etc., it becomes very difficult to separate them from the slender-billed Tanagers, the Wood Warblers, and the *Helminthophuges*.

Although the family is one widely distributed, in numerous genera, over Middle and South America, but one, *Certhiola*, belongs to North America, this being represented by a species, or rather a race, abundant in the Bahamas, and occasionally met with in the Florida Keys. We shall therefore give only the diagnosis of this family.

GENUS CERTHIOLA, SUNDEVALL.

Certhiola, SUNDEVALL, Vet. Akad. Handl. Stockholm, 1835, 99. (Type, *Certhia flaveola*, LINN.)

GEN. CHAR. Bill nearly as long as the head; as high as broad at base, elongated, conical, very acute, and gently decurved from base to tip. Culmen uniformly convex; gonys concave. No bristles at base of bill. Tail rounded, rather shorter than the wings. Tarsi longer than the middle toe. Iris brown? Nest pensile and arched. Eggs with yellowish ground dotted thickly with rufous spots.



Certhiola flaveola, Sund.

This genus is one of those especially characterizing the West Indies, almost every island as far as known having its peculiar species, differing, it is true, in very slight characters, but always constant to the normal type. Cuba alone has so far furnished no representative of this genus, its place being supplied apparently by *Cæreba cyanea*. The specimens from St. Thomas I cannot distinguish from those of Porto Rico, but this is, so far as the series before me indicates, the only case where one species occurs on two islands. All the West Indian species, nine or ten in number, agree in having the whole upper part nearly uniformly dusky or blackish; the head and back being concolored, while of the three or four South American all but one (*C. luteola*) have the back more olivaceous, the head much darker. Again, the West Indian species, with a single exception (*C. bananivora*), have both webs of lateral tail-feathers broadly and about equally tipped with white; while in all the South American this white is more restricted on the inner

web, and on the outer reduced to a narrow border. *C. caboti* from Cozumel, near the eastern coast of Yucatan, exhibits the Continental impress in possessing the character last mentioned.

In all the species from the Greater Antilles and the portion of Continental



Certhiola flaveola.

tal America west and directly south of this group, there is a distinct external white patch at base of quills; while this disappears in the species of the Lesser Antilles and eastern South America, or is only faintly traceable. Again, in the species of the Lesser Antilles, with the disappearance of the white wing-patch, the greater and middle wing-coverts show a faint edging of

lighter, by which, as well as by the darker back, they are distinguished from their South American allies.

The shape of the white patch at base of the quills on the outer web furnishes, in combination with the color of the throat, excellent and permanent specific characters. This in the Jamaican, Haytian, and Bahaman forms is elongated, extending gradually and uniformly behind to the outer edge of the quill, while in those of Porto Rico, St. Thomas, Cozumel, and the South American species, where it exists, the posterior outline is nearly transverse, and only running out a little along outer web.

As a general rule South American species have shorter tails than the West Indian.

It is a nice question what are really species in this genus, and what merely races or varieties; but it would probably be not far from correct to assume that the various forms described are simply modifications of one primitive species, produced by geographical distribution and external physical conditions. In the following diagnosis I shall treat all the varieties as occupying the same rank, without attempting any discrimination. Although but one of these belongs to the United States, and that as a straggler from the Bahamas, I give the table of the whole, to show the interesting relationship between them.

COMMON CHARACTERS. Above dusky-olive or blackish; the rump olivaceous or yellowish; the head and cheeks always black, and sometimes darker than back. Chin and throat ashy or black. Rest of under part yellow, duller behind. A broad white stripe from bill above eye to nape. A white patch at base of primaries; generally visible externally, sometimes concealed. Lateral tail-feathers tipped with white. Bill black; legs dusky.

A. Head uniform in color with rest of upper parts; dark sooty-brown or blackish. Both webs of outer tail-feather tipped with white (except in *luteola*). All West Indian except *luteola*, which, however, occurs in Tobago and Trinidad, and generally belongs to the shores of the Caribbean Sea.

1. A distinct and conspicuous external white patch at base of primaries. Wing-coverts not margined with paler.

a. Throat uniformly but decided dark ash-color, varying in shade, never entirely black, however, nor ashy-white.

Throat very dark ash, not contrasting or appreciably different from blackish of cheeks.

Wing-spot elongated; the white running out gradually and obliquely behind to the outer edge of the primary, reaching shaft of outer primary. Yellow of breast decidedly ochraceous. Rump as bright yellow as the belly. *Hab.* Jamaica . . . *flaveola*.¹

White patch of wing more quadrate on each quill; transverse; not tapering off gradually and uniformly behind; not reaching the shaft on outer primary. Breast without ochraceous; rump olivaceous-yellow; the color different from that of belly. *Hab.* Santa Cruz . . . *newtoni*.²

b. Chin and throat lighter ash (but not at all whitish); in decided and appreciable contrast with blackish of cheeks. Jugulum yellow, like under parts generally.

Lateral tail-feather broadly tipped with white on both webs. Rump olivaceous-yellow.

Wing-spot on each primary nearly quadrate, as in *newtoni*.

Hab. Porto Rico and St. Thomas . . . *portoricensis*.³

Lateral tail-feather with inner web only broadly tipped with white. Rump bright yellow like belly. Bill very small.

White of wing as in *flaveola*, but less extended, and margining edge only of outer primary. *Hab.* Hayti and St. Domingo . . . *bananivora*.⁴

White of wing as in *newtoni*. Size much larger; darker above. *Hab.* Tobago, Trinidad, and north shore of South America . . . *luteola*.⁵

c. Chin, throat, and jugulum white, with a tinge of ashy. Yellow of under parts much restricted.

Depth of bill less than half distance from nostril to tip. Superciliary stripe reaching to nape. Yellow of under part restricted to a triangular patch on breast. White spot on wing large, tapering off gradually on each primary, as in *flaveola*; on the outer reaching shaft. Both webs of outer tail-feather about equally tipped. *Hab.* Bahamas and Florida Keys . . . *bahamensis*.⁶

Depth of bill fully half distance from nostril to tip. Superciliary stripe reaching the occiput only. Yellow of under parts more extended. White spot on wing restricted; more quadrate, as in *newtoni*; edge only of outer primary involved. Outer web of outer tail-feather scarcely tipped. *Hab.* Cozumel Island, Yucatan . . . *caboti*.⁷

2. No external white patch at base of primary quills. Wing-coverts obscurely margined with paler. Both webs of outer tail-feathers tipped about equally with white. Rump olivaceous; this color of but slight extent.

¹ *Certhia flaveola*, LINN. Syst. Nat. ed. 10, 1758, 119.

² *C. flaveola*, A. & E. NEWTON, Ibis, 1859, 67. *Hab.* St. Croix. *C. newtoni*, BAIRD.

³ *C. flaveola*, var. *portoricensis*, BRYANT, Pr. Bost. Soc. N. H. Jan. 1866. *Hab.* Porto Rico.

⁴ *Motacilla bananivora*, GMELIN, Syst. Nat. I, 1788, 951. (*Bananiste*, Buffon, St. Domingo.)

⁵ *Certhiola luteola*, CAB. M. H. 1851, 96. *C. major*, CAB.; *C. minor*, BON.

⁶ *Certhiola bahamensis*, REICH. Handb. I, 1853, 253. *C. flaveola*, BAIRD, B. N. A.; *C. bairdi*, CAB.

⁷ *C. caboti*, BAIRD, MSS.

a. Throat black; continuous with black of cheeks; or else very dark plumbeous, scarcely distinguishable from the cheeks.

Median line of throat white, the sides black like the cheeks; chin alone black. Superciliary stripes not confluent anteriorly. *Hab.*

Martinique *martinicensis*¹

Whole throat blackish. No white frontal band?

Wing 2.50 inches. Belly ochraceous *Hab.* Dominica Isl-
and, West Indies *dominicensis*²

Wing 2.20 inches. Belly more yellow. *Hab.* Barbadoes .
 *barbadensis*³

Whole throat very dark plumbeous. A whitish frontal broad band connecting the superciliary stripes which extend in front of the eye. *Hab.* Antigua, West Indies *frontalis*⁴

A grayish frontal band; superciliary stripes narrow; not extending in front of eye. Trace of white patch at base of primaries .

. *bartholemica*⁵

B. Head blackish, in distinct contrast to the more olivaceous back. Outer tail-feather with outer web scarcely tipped with white. Wing-coverts not margined with paler. Throat light ash, in distinct contrast to black of cheek.

1. A distinct external white wing-patch at base of primaries.

Rump olive-green. *Hab.* Mexico and Central America, but hardly reaching line of Panama R. R. *mexicana*⁶

Rump olive-yellow. *Hab.* Panama R. R.; south along Andes to Peru *peruviana*⁷

a. No external white wing-patch.

Rump olive-green. *Hab.* Brazil and Guiana *chloropyga*⁸

The preceding table is based upon a critical examination of many hundred specimens belonging to the Smithsonian Institution. — S. F. BAIRD.

Certhiola bahamensis, REICH.

BAHAMA CREEPER.

Certhia flaveola, var. β . LINN. Syst. Nat. ed. 12, I, 1766, 187. ("Certhia" *bahamensis*, CATESBY, Car. tab. 59. Bahamas.) *Certhiola flavedo*, BAIRD, Birds N. Am. 1858, 924, pl. lxxxiii, f. 3 (Indian Key, Fla.). *Certhiola bahamensis*, REICH. Handb. I, 1853, 253 (CATESBY, Car. tab. 59, Bahamas). — CASSIN, Pr. A. N. S. Ph. 1864, 271. *C. bairdi*, CABANIS, Jour. Orn. 1865, 412 (*C. flavedo*, BAIRD, Birds N. A.).

SP. CHAR. (11,951 ♂, Bahamas.) Above dark dusky-brown; scarcely darker on the head; the rump yellow. Edge of wing and a triangular patch covering the front of breast (the angle behind) pale yellow; the rest of under parts pale ashy-white, palest on front

¹ *C. martinicensis*, REICH. Handb. I, 1853, 252. *C. olivacea*, BON.

² *C. dominicensis*, TAYLOR, His. 1864, 167.

³ *C. barbadensis*, BAIRD, MSS.

⁴ *C. frontalis*, BAIRD, MSS.

⁵ *C. bartholemica*, SUNDEVALL & SPARRMANN, Vetensk. Akad. Forh., 21. 1869, 622.

⁶ *C. mexicanus*, SOLATEL, P. Z. S. 1856, 286.

⁷ *C. peruviana*, CAS. Journ. 1865, 413? Perhaps different.

⁸ *C. chloropyga*, CAS. M. H. 1851, 97. *C. brasiliensis*, BR.

and sides of neck and on crissum; on flanks somewhat soiled and rather darker. A broad superciliary white stripe (not crossing the forehead) from bill to nape, but little lighter than the throat; the line of feathers immediately behind the nostrils, and a small patch at base of lower mandible under the tip, with the usual stripe from bill through the eye, being blackish. White spot at base of quills very distinct externally; the posterior outline on each outer web of the primaries not quadrate, but running out obliquely behind and on the outermost quill reaching the shaft. Edges of quills narrowly margined with grayish-white; on the secondaries continued round the tips. No distinct bands on the coverts. Outer tail-feathers broadly tipped with white; this even involving the innermost, but reduced to a narrow edge. Total length, 4.40; wing, 2.30; tail, 1.80.

Bill: Length from forehead, .62; from nostril, .41; along gape, .59; depth at base, .17. Legs: Tarsus, .75; middle toe and claw, .58; claw alone, .17; hind toe and claw, .45; claw alone, .20.

HAB. Bahamas and Keys of southeast coast of Florida.

A specimen from the Florida Keys (10,367) is rather darker than those from the Bahamas, the white less extended, and not quite reaching the shafts in the outer quills.

HABITS. This species, belonging properly to the Bahaman group of the West Indian Islands, was found at Indian Key, Fla., January 31, 1858, by Mr. Würdemann, where it appeared to be not at all rare. Nothing is known of its habits, but they are doubtless nearly the same as those of the allied species. The *C. flaveola* is known in Jamaica as the Banana Quit, Honey-Sucker, and Black and Yellow Creeper. According to the description of them given by Mr. Gosse, these birds, scarcely larger than the Humming-Birds, are often seen in company with them, probing the flowers for similar purposes, but in a very different manner. Instead of hovering like the Humming-Bird in front of the blossom, for which its short wings would be incompetent, these birds alight on the tree and proceed in a very business-like manner. Hopping from twig to twig in an active manner, they carefully examine each blossom. In doing this they throw their bodies into a variety of positions, often clinging by the feet with the back downwards, the better to reach the interior of a blossom with their curved beaks and peculiar tongue. The objects of these researches are the small insects which are always found in the interior of flowers. This bird is unsuspecting and familiar, and very freely resorts to the blossoming shrubs of the gardens and yards. Mr. Gosse mentions, in evidence of this familiarity, that a large moringa-tree under his window, as he was writing, and which all through the year was profusely set with fragrant blossoms, and was a favorite resort of these birds, was being carefully scrutinized by two active little Creepers. Although within a few feet of his window, they pursued their examinations, perfectly undisturbed by his looking on. As they move about they utter a soft sibilant note.

The nests of this little bird are usually built in those low trees and bushes to which are fastened the nests of the brown wasps, and in close contiguity to them. Mr. Gosse regards this singular predilection as a remarkable exercise of instinct, if not of reason, as the evident object of it is the protection

afforded by the presence of those formidable insects, though upon what terms of amity this defensive alliance is kept does not appear.

These Creepers incubate during the months of May, June, and July. On the 4th of May, Mr. Gosse observed one with a bit of "silk-cotton" in her beak, and found the skeleton of the nest just commenced in a bush of the *Lantana camara*. It was evidently to be of dome shape, and so far had been constructed entirely of silk-cotton. The completed nests are made in the form of a globe, with a small opening below the side. The walls are very thick, composed of dry grasses intermixed irregularly with the down of asclepias. One of these nests was fixed between the twigs of a branch of a *Bauhinia* projecting over a highway. Another, found towards the end of June, was built in a bush of *Lantana*, and of the same structure. It contained two eggs, greenish-white, thickly but indefinitely dashed with reddish at the larger end. Mr. Gosse quotes a Mr. Robinson as giving their dimensions at .44 by .31 of an inch, while his own specimens are much larger than this, measuring .63 by nearly .50. Two eggs of *C. flarcola*, from Jamaica, in my cabinet, measure .68 by .51 and .68 by .49 of an inch. In one the ground is a dull white, so generally and thickly covered with minute but confluent dots of reddish-brown as to impart a pinkish tinge to the whole egg. In the other the ground is a dull white, sparingly marked with blotches of brown over about three fourths of its surface, but at the larger end covered with a crown of larger and confluent blotches of subdued purple and dark umber, intermingled with a few lines of a darker hue, almost black.

Two eggs of *C. newtoni*, from St. Croix, are of a more rounded-oval shape, and measure .69 by .45 and .65 by .44 of an inch. They have a dull white ground, but this is so uniformly and generally covered with confluent reddish-brown markings as to be nowhere very distinct.

The St. Croix species is called the Sugar-Bird in that island, from its habit of entering the curing-houses, through the barred windows, probably attracted thither by the swarms of flies. It is a very familiar species, haunting gardens, and often entering houses, and never manifesting any alarm. It keeps in pairs, and breeds from March to August. Mr. Newton states that it builds a domed and often pensile nest, with a small porch, or pent-house roof, over the entrance, generally at the extremity of a leafy bough. The nest is generally very untidy on the outside, and is composed of coarse grass and cotton, with feathers on the inside. It deposits its eggs before the completion of the nest, "rather to the discomfiture of the oologist, who delays inserting his finger into the structure while he sees one or both of the birds busy with a tuft of grass or cotton in their bills, until at last he finds their eggs already hatched." Mr. Newton observed one instance in which two broods were reared in the same nest, with only an interval of ten days between the time the young left it and the laying of an egg.

FAMILY **TANAGRIDÆ.** — THE TANAGERS.

CHAR. Primaries nine. Bill usually conical, sometimes depressed or attenuated, usually more or less triangular at base, and with the cutting edges not much inflected; sometimes toothed or notched. Legs short; claws curved; colors usually brilliant.

We confess our entire inability to present a diagnosis that shall define and separate satisfactorily by external characters the closely allied families of *Certhiidae*, *Sylviidae*, *Tanagridae*, and *Fringillidae*, agreeing as they do in the main in every respect. The only attempt at distinction is based upon the shape of the bill, and this in what are generally called *Tanagridae* presents every variety of shape, from the attenuation seen in *Dendroica* to the stoutest form of the *Fringillidae*. The *Certhiidae* have peculiarities of the tongue, not appreciable, however, in the skin. In view, therefore, of the difficulty in question, we shall copy the conventional names and unsatisfactory definitions of other authors, in our inability to present a satisfactory arrangement of our own.

Carus and Gerstaecker in *Handbuch der Zoologie*, I, 277, adopt a classification of the *Oscines* based on the palatine bones in which *Fringillidae* and *Tanagridae* are distinguished from the *Sylviidae* as follows:—

Suborder OSCINES, SUNDEVALL. Of the ten primaries, the first is short, rudimentary, or wanting; the number of secondaries is rarely more than nine. Tarsus entirely booted, or else with an undivided plate on the sides. Lower trachea completely formed by the help of the trachea and bronchiæ; generally with four pairs of muscles, distributed before and behind.

GROUP I. SPIZOGNATHÆ. Outer lamella of the palatine bone developed in a vertical plane, with the hinder border more or less emarginated; the anterior palatine process broad, and united by a truncated border to the high and broad upper mandible.

FAMILY 1. *Ploceidae*. Ten primaries.

FAMILY 2. *Fringillidae*. Bill encircled by a more or less distinct swelling at base. Frontal feathers not forming lateral angles. Edges of the jaws drawn in as far as the corner of the mouth; nine primaries; the first three usually longest. Legs with undivided plates behind.

FAMILY 3. *Tanagridae*. Bill more or less triangular at the base. Culmen always more or less curved. Frequently a tooth or notch in the upper bill, sometimes fine serrations. Wings moderate; somewhat pointed; primaries nine. Tarsus and toes short and stout. Hind toe stout and long. Claws curved.

GROUP II. CORÆOGNATHÆ. Palatine bone broad and rather flat behind, the external angles prolonged, not extended into a vertical plate. Base of bill generally narrower. Primaries nine or ten. This section embraces, of North American forms:—

Mniotiltidae,	Certhiidae,	Certhiidae,
Motacillidae,	Hirundinidae,	Paridae,
Alaudidae,	Ampelidae,	Icteridae,
Sylviidae,	Laniidae,	Corvidae,
Turdidae,	Troglodytidae,	

all of which have already been described in the present work, with the exception of the last two.

The family of Tanagers is peculiar to the New World, which abounds in species of a great variety of forms. Only one genus, *Pyrauga*, actually enters within the limits of the United States, with four well-marked species, there being many others in Central and South America.

GENUS *PYRANGA*, VIEILL.

Pyrauga, VIEILLOT, Ois. Am. Sept. 1, 1807, iv. — *lb.* Analyse, 1816, 32. — SCLATER, *Pr. Zool. Soc.* 1856, 123.

Phaeniscoma, SWAINSON, *Class. Birds*, 11, 1837, 284.

GEN. CHAR. Bill somewhat straight; subconical, cylindrical, notched at tip; culmen moderately curved; commissure with a median acute lobe. Wings elongated; the four first primaries longest. Tail moderate, slightly forked. Colors of the male chiefly scarlet, of the female yellowish.



Pyrauga rubra

The rictus is well provided with bristles, which bend downwards, but if brought forward would reach the nostrils. These are rounded, and are closely crowded by the frontal feathers. The tarsus is shorter than the

middle toe, scutellate anteriorly, and smooth on the sides behind. The lateral toes are about equal; the basal joint of the middle toe united for half its length to the inner toe, and by almost the whole length to the outer.

The following table may serve to distinguish the males of the several species of this genus. The females of all differ from the males in having the red replaced, the dusky of upper surface by olive-green, the brighter tint of lower parts by yellow. — R. RIDGWAY

Species and Varieties.

A. Wing and tail blackish or deep black, in more or less striking contrast to the color of the upper parts. Wing with two light bands (except in *P. rubra*).

a. Body and head red in the ♂; yellow in the ♀.

Wings intense black in the ♂; back not streaked.

1 ***P. rubra***. Wing without any bands, or with merely indications of bright scarlet ones. ♂. Intense pure scarlet, wings and tail intense black. ♀. Olive-green above (including wings and tail), pale yellow below. *Juv. ♂*. Olive-green above, yellow below; wings and tail black. *Hab.* Eastern Province of United States.

2. *P. erythromelæna*. Wing with two bands of pure white. ♂. Bright scarlet; wings, tail, and lores intense black. ♀. Olive-green above, yellow beneath; wings and tail slaty.

Forehead, eyelids, and anterior half of cheeks velvety-black; red of a carmine shade. *Hab.* Middle America, north to Mirador.

var. *erythromelæna*.¹

Forehead, eyelids, and anterior half of cheeks scarlet (lores only black); red of a scarlet shade. *Hab.* Northern South America.

var. *ardens*.²

Wings brownish-dusky in the ♂; back streaked with black.

3. *P. bidentata*.³ Wing with two bands of pinkish-white (♂), or yellowish-white (♀). ♂. Above reddish-brown; head and beneath minium-scarlet. ♀. Above olive-green; head and beneath yellow. *Hab.* Middle America (both coasts) from Costa Rica to Middle Mexico.

♂. Body always yellow; head red in the ♂.

Lesser wing-coverts black or dusky.

4. *P. ludoviciana*. Wing with two light yellow bands. ♂. Back, wings, and tail intense black; head crimson. ♀. Above olive-green, tinged with ashy on the back; beneath pale greenish-yellow; wings and tail dusky olive-green; no red on head. *Hab.* Western Province of United States.

Lesser wing-coverts and middle coverts yellow.

5. *P. rubriceps*.⁴ Wing without light bands. ♂. Back and rump olive-green; wings and tail black; head crimson. *Hab.* New Granada.

B. Wing and tail reddish or greenish, of the same general color of the upper parts; wing without any light bands.

a. Wing 3.00. Body always yellow; head red in the ♂.

6. *P. erythrocephala*.⁵ Above olive-green, beneath yellow. ♂. Head red. Wing, 3.00; tail, 2.70. *Hab.* Mexico (Temiscaltepec).

b. Wing 3.50 or more. Body and head red in ♂.

Commissure with a distinct tooth; bill bluish.

7. *P. hepatica*. Bill small, not swollen laterally; culmen gently curved terminally, straight basally; commissural tooth small. ♂. Above reddish-ashy, becoming brighter reddish on the head above; beneath minium-scarlet medially, much tinged with ashy laterally. ♀. Ashy-green and greenish-yellow, instead of reddish. *Juv.* ♂, similar, but throat tinged with orange-red.

¹ *Pyrranga erythromelæna*, SCLATER, P. Z. S. Lond. 1856, 126. (*Tanagra erythromelas*, LICHT. Preis.-Verz. d. Säug. u. Vög. no. 69; 1831.)

² *Pyrranga ardens*, SCLATER, P. Z. S. 1856, 126. (*Phœnisoma ardens*, TSCHUDI. Wieg. Archiv, 1844, 207.)

³ *Pyrranga bidentata*, SWAINS. Philos. Mag. 1827, 428.

⁴ *Pyrranga rubriceps*, GRAY, Gen. B. fol. p. 364, pl. lxxxix, 1849.

⁵ *Pyrranga erythrocephala*, BONAP. R. Z. 1851, 178. (*Spermagra erythrocephala*, SWAINS. Phil. Mag. 1827, 437. Were it not for the small size, one would, without seeing a specimen, be inclined to suspect this as being a young male of *P. aestiva*, which often occurs in very similar plumage.

Auriculars grayish like the back; eyelids light red; lores grayish. Wing, 4.10; tail, 3.40; bill, .50. *Hab.* Table-lands of Middle America, north into southern Rocky Mountains of United States.

var. *hepatica*.

Auriculars reddish like the neck; eyelids and lores well defined, buffy-white. Wing, 3.90; tail, 3.25; bill, .46. *Hab.* Paraguay.

var. *azara*.¹

8. *P. saira*. Bill large, much swollen laterally, the culmen curved both terminally and basally. ♂. Above dark brownish-red, beneath deep scarlet, duller laterally. ♀. Bright olive-green and intense orange-yellow, instead of reddish.

Commissural tooth indistinct; forehead considerably brighter reddish or yellowish than the back. ♂. Beneath almost entirely pure vermilion-scarlet. ♀. Beneath almost wholly pure gamboge-yellow. Wing, 4.00; tail, 3.40; culmen, .80. *Hab.* Eastern South America (Brazil and Trinidad).

var. *saira*.²

Commissural tooth distinct, prominent; forehead scarcely brighter reddish or yellowish than the back. ♂. Beneath brownish-scarlet medially, more brownish laterally. ♀. Beneath Indian-yellow medially, greenish laterally. Wing, 3.70; tail, 3.20; culmen, .80. *Hab.* Southern Middle America, on the Atlantic (Belize, Rio Manati, Costa Rica, Angostura, and Veragua).

var. *testacea*.³

Commissure without an appreciable tooth; bill pale brownish.

9. *P. aestiva*. ♂. Above purplish-red, beneath pure, fine, rosaceous-vermilion. ♀. Above brownish olive-green, beneath ochraceous-yellow.

Head above scarcely brighter reddish or yellowish than the back. Bill, .55, or less, from nostril; primaries, .84 longer than secondaries. Wing, 3.81; tail, 2.96; bill, .52. *Hab.* Eastern Province of United States, south, in winter, through Eastern Middle America to Peru.

var. *aestiva*

Head above decidedly brighter reddish or yellowish than the back. Bill, .60 or more, from nostril; primaries, 1.16 longer than secondaries. Wing, 4.24; tail, 3.68; bill, .64. *Hab.* Southern Middle Province of United States (Upper Rio Grande region and Lower Colorado Basin); in winter south, through Western Mexico, to Colima.

var. *cooperi*.

C. Body ashy; wings, tail, and pileum dull purplish-red; throat, lining of wing and crissum dilute rose-pink in the ♂.

10. *P. roseigularis*.⁴ Sides of head, nape, back, and scapulars deep ash, the dorsal region with a faint purplish cast; lores, eyelids, cheeks, and lower parts in general, paler, and with a dingy buff tinge, paler on the abdomen, and more strongly marked with ash across the breast.

¹ *Pyrausta azara*, D'Orb. Voy. p. 264. RIDGWAY, Pr. Ac. N. S. Philad. June, 1869, p. 132, fig. 2.

² *Pyrausta saira*, SCHATER, P. Z. S. 1856, 124. RIDGWAY, Pr. A. N. S. June, 1869, p. 131, fig. 1. (*Tamias saira*, STUX, AV. BIRDS, 11, 48, fig. 1.)

³ *Pyrausta testacea*, SCHATER & SALVIN, P. Z. S. 1868, 388. RIDGWAY, Pr. A. N. S. June, 1869, p. 133, f. 1.

⁴ *Pyrausta roseigularis*, CAUD. (Description from the type.)

and along sides. Whole pileum, from bill to nape and down to the upper edge of lores, eyes, and auriculars, wings, upper tail-coverts, and tail, dark purplish-red. Whole throat dilute vermillion, or rose-pink sharply defined; crissum and lining of wings a paler shade of the same. Wing, 3.05; tail, 2.75; bill, from nostril, .45; its depth at the base, .40, its breadth, .30; tarsus, .80. *Hab.* Yucatan.

***Pyranga rubra*, VIEILL.**

THE SCARLET TANAGER.

Tanagra rubra, LINN. I, 1766, 314. — GMELIN, I, 1788, 889. — WILSON, AM. ORN. II, 1810, 42; pl. xi, f. 3, 4. — AUD. ORN. BIOG. IV, 1838, 388; pl. cceliv. *Pyranga rubra*, VIEILL. OIS. AM. SEPT. I, 1807, iv; pl. i, f. 12 (Head.). — SWAINSON, F. BOR. AM. II, 1831, 273. — BON. LIST. 1838. — IB. CONSP. 1850. — AUD. SYN. 1839, 136. — IB. BIRDS AM. II, 1841, 226; pl. ccix. — SCLATER, PR. ZOOL. SOC. 1855, 156. — IB. 1856, 123. — MAX. CAB. JOUR. VI, 1858, 270. — SAMUELS, 251. *Phœnisoma rubra*, SW. BIRDS, II, 1837, 284. *Phœnicosoma rubra*, CAB. MUS. HEIN. 1851, 24. *Pyranga erythronelas*, VIEILL. "ENCYC. MÉTH. 800." — IB. NOUV. DICT. XXVIII, 1817, 293.

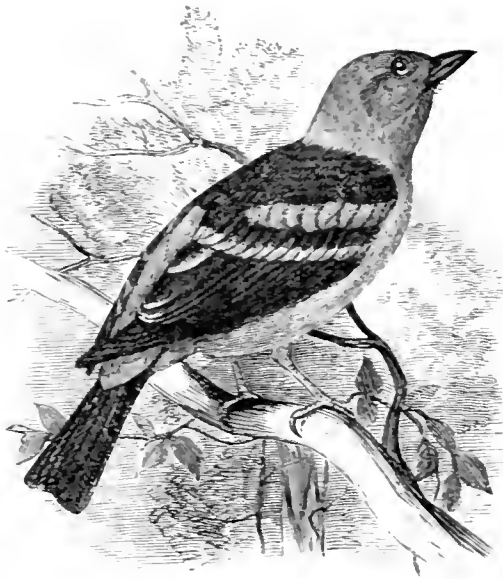
SP. CHAR. Bill shorter than the head. Second quill longest; first and third a little shorter. Tail moderately forked. *Male.* Whole head and body continuous, pure, intense scarlet, the feathers white beneath the surface, and grayish at the roots. Wings and tail, with the scapulars, uniform intense black; the middle-coverts sometimes partly red, forming an interrupted band. Lining of wing white. A blackish tinge along sides of the rump, concealed by wings. Bill pea-green; iris brown; tarsi and toes dull blue. *Female.* Olive-green above, yellowish beneath. Wing and tail feathers brown, edged with olivaceous. Length, 7.40; wing, 4.00; tail, 3.00.

HAB. Eastern Province North America, north to Winnepeg (west to El Paso? HEERMANN). In winter, south to Ecuador (Rio Napo, SCL.). Bogota (SCL.) Cuba (SCL. & GUNDEL.); Jamaica (SCL. & GOSSE); Panama (LAWR.); Costa Rica (LAWR.); Vera Cruz (winter, SUMICHRAST).

At least three years seem to be required for the assumption of the perfect plumage of the male. In the first year the young male is like the female, but has black wings and tail; in the fall red feathers begin to make their appearance, and the following spring the red predominates in patches.

HABITS. The Scarlet Tanager is one of the most conspicuous and brilliant of all our summer visitants. Elegant in its attire, retiring and modest in manners, sweet in song, and useful in its destruction of hurtful insects, it well merits a cordial welcome. This

Tanager is distributed over a wide extent of territory, from Texas to Maine, and from South Carolina to the northern shores of Lake Huron, in all which



Pyranga ludoviciana.

localities it breeds. A few are found once in a while as far east as Calais, in the spring, and they are rather occasional than common in Eastern Massachusetts, but are more plentiful in the western part of the State, becoming quite common about Springfield, arriving May 15, and remaining about four months, breeding in high open woods and old orchards. In South Carolina it is abundant as a migrant, though a few remain and breed in the higher lands. Mr. Audubon states, also, that a few breed in the higher portions of Louisiana, and Dr. Heermann found them breeding at El Paso, in New Mexico. They are far more abundant, however, in the States of Pennsylvania, New Jersey, Virginia, and throughout the Mississippi Valley, arriving early in May, and leaving in October. Though occasionally found in the more sparsely settled portions of the country, in orchards and retired gardens, they are, as a rule, inhabitants of the edges of forests.

Their more common notes are simple and brief, resembling, according to Wilson, the sounds *chip-charr*. Mr. Ridgway represents them by *chip-a-rd-ree*. This song it repeats at brief intervals and in a pensive tone, and with a singular faculty of causing it to seem to come from a greater than the real distance. Besides this it also has a more varied and musical chant resembling the mellow notes of the Baltimore Oriole. The female also utters similar notes when her nest is approached, and in their mating-season, as they move together through the branches, they both utter a low whispering warble in a tone of great sweetness and tenderness. As a whole, this bird may be regarded as a musical performer of very respectable merits.

The food of this species is chiefly gleaned among the upper branches, and consists of various coleopterous and other insects and their larvæ. Later in the season they consume various kinds of wild berries.

When their nest is approached, the male bird usually keeps at a cautious distance, as if fearful of being seen, but his much less gaudy mate hovers about the intruder in the greatest distress. Wilson relates quite a touching instance of the devotion of the parent of this species to its young. Having taken a young bird from the nest, and carried it to his friend, Mr. Bartram, it was placed in a cage, and suspended near a nest containing young Orioles, in hopes the parents of the latter would feed it, which they did not do. Its cries, however, attracted its own parent, who assiduously attended it and supplied it with food for several days, became more and more solicitous for its liberation, and constantly uttered cries of entreaty to its offspring to come out of its prison. At last this was more than Mr. Bartram could endure, and he mounted to the cage, took out the prisoner, and restored it to its parent, who accompanied it in its flight to the woods with notes of great exultation.

Early in August the male begins to moult, and in the course of a few days, dressed in the greenish livery of the female, he is not distinguishable from her or his young family. In this humble garb they leave us, and do not resume their summer plumage until just as they are re-entering our southern borders, when they may be seen in various stages of transformation.

This species is extremely susceptible to cold, and in late and unusually chilly seasons large numbers often perish in their more northern haunts, as Massachusetts and Northern New York.

The nests of the Scarlet Tanager are built late in May, or early in June, on the horizontal branch of a forest tree, usually on the edge of a wood, but occasionally in an orchard. They are usually very nearly flat, five or six inches in diameter, and about two in height, with a depression of only about half an inch. They are of somewhat irregular shape, or not quite symmetrically circular. Their base is somewhat loosely constructed of coarse stems of vegetables, strips of bark, and the rootlets of wooded plants. Upon this is wrought, with more compactness and neatness, a framework, within which is the lining, of long slender fibrous roots, interspersed with which are slender stems of plants and a few strips of fine inner bark.

Mr. Nuttall describes a nest examined by him as composed of rigid stalks of weeds and slender fir-twigs tied together with narrow strips of *Apocynum* and pea-vine runners, and lined with slender wiry stalks of the *Helianthemum*, the whole so thinly plaited as readily to admit the light through the interstices.

The eggs, four or five in number, vary in length from an inch to .90, and have an average breadth of .65. Their ground-color varies from a well-marked shade of greenish-blue, to a dull white with hardly the least tinge of blue. The spots vary in size, are more or less confluent, and are chiefly of a reddish or rufous brown, intermingled with a few spots of a brownish and obscure purple.

Pyrrhula ludoviciana, BONAP.

LOUISIANA TANAGER.

Tanagra ludoviciana, WILSON, Am. Orn. III, 1811, 27. pl. xx, f. 1. — BON. Obs. 1826, 95. — AUD. Orn. Biog. IV, 1838, 385; V, 1839, 90, pl. ccciv, cccc. *Tanagra* (*Pyrrhula*) *ludoviciana*, BONAP. Syn. 1828, 105. — NUTTALL, Man. I, 1832, 471. *Pyrrhula ludoviciana*, RICH. List, 1837. — BONAP. List, 1838. — AUD. Syn. 1839, 137. — IB. Birds Am. III, 1841, 211, pl. ccx. — SCLATER, Pr. Zool. Soc. 1856, 125. — COOPER, Orn. Cal. I, 1870, 145. *Pyrrhula erythropis*, VIEILLIOT, Nouv. Dict. XXVIII, 1819, 291. (" *Tanagra columbiana*, JARD. ed. Wilson, I, 317," according to Sclater, but I cannot find such name.)

SP. CHAR. Bill shorter than the head. Tail slightly forked: first three quills nearly equal. *Male*. Yellow: the middle of the back, the wings, and the tail black. Head and neck all round strongly tinged with red: least so on the sides. A band of yellow across the middle coverts, and of yellowish-white across the greater ones: the tertials more or less edged with whitish. *Female*. Olive-green above, yellowish beneath: the feathers of the interseapular region dusky, margined with olive. The wings and tail rather dark brown, the former with the same marks as the male. Length, 7.25; wing, 3.60; tail, 2.85.

HAB. Western portions of United States, from the Missouri Plains to the Pacific; north to Fort Liard, south to Cape St. Lucas. Oaxaca (SCL.); Guatemala (SCL.); Orizaba (SCL.); Vera Cruz (winter, SUMICHRAST).

HABITS. This bird is one of the many instances in which Wilson has been unfortunate in bestowing upon his new species a geographical name not appropriate at the present time. We have no evidence that this bird, called the Louisiana Tanager, is ever found within the modern limits of that State, although it occurs from the Great Plains to the Pacific, and from Fort Liard, in the northern Rocky Mountains, to Mexico.

It was first met with by Lewis and Clark's party, on the Upper Missouri, a region then known as Louisiana Territory. They were said to inhabit the extensive plains in what was then called Missouri Territory, building their nests in low bushes, and even among the grass, and delighting in the various kinds of berries with which those fertile prairies were said to abound.

Mr. Nuttall, who met with these birds in his Western excursions, describes them as continually flitting over those vast downs, occasionally alighting on the stems of some tall weed, or the bushes bordering the streams. Their habits are very terrestrial, and from this he infers that they derive their food from the insects they find near the ground, as well as from the seeds of the herbage in which they chiefly dwell. He found them a common and numerous species, remaining in the country west of the Mississippi until the approach of October. In his first observations of them he states that though he had seen many of these birds, yet he had no recollection of hearing them utter any modulated or musical sounds. They appeared to him shy, flitting, and almost silent.

He first observed these birds in a thick belt of wood near Laramie's Fork of the Platte, at a considerable distance east of the Black Hills. He afterwards found them very abundant, in the spring, in the forests of the Columbia, below Fort Vancouver. In these latter observations he modified his views as to their song, and states that he could frequently trace them by their notes, which are a loud, short, and slow, but pleasing warble, not very unlike that of the common Robin, delivered from the tops of lofty fir-trees. Their music continues, at short intervals, during the forenoon, and while they are busily engaged in searching for larvæ and coleopterous insects, on the small branches of the trees.

Dr. Suckley found this Tanager quite abundant at certain seasons in the vicinity of Fort Steilacoom. In one year a very limited number were seen; in another they were very abundant. From frequent opportunities to examine and to study their habits, he was inclined to discredit the statement of Nuttall that they descend to low bushes, the reverse being the rule. He found it very difficult to meet with any sufficiently low down in the trees for him to kill them with fine shot. Their favorite abode, in the localities where he observed them, was among the upper branches of the tall *Abies douglassii*. They prefer the edge of the forests, rarely retiring to the depths. In early summer, at Fort Steilacoom, they could be seen during the middle of the day, sunning themselves in the firs, or darting from one of those trees to another, or to some of the neighboring white oaks on the prairie. Later

in the season they were to be seen flying very actively about in quest of insect food for their young. On the 10th of July he saw one carrying a worm in its mouth, showing that its young were then hatched out. During the breeding-season they are much less shy, the males frequently sitting on some low limb, rendering the neighborhood joyous with their delightful melody.

Their stomachs were found filled with insects, chiefly coleoptera; among these were many fragments of the large green *Buprestis*, found on the Douglass fir-trees.

Dr. Cooper adds to this account, that this bird arrives at Puget Sound about May 15, and becomes a common summer resident in Washington Territory, especially near the river-banks and among the prairies, on which are found deciduous trees. He compares its song to that of its black-winged relative (*P. rubra*), being of a few notes only, whistled in the manner of the Robin, and sounding as if the bird were quite distant, when in reality it is very near. He met with these birds east of the Rocky Mountains and up to the 49th parallel.

In California the same observer noticed their arrival near San Diego, in small parties, about the 24th of April. The males come in advance of their mates, and are more bold and conspicuous, the females being rarely seen. He saw none of them in the Coast Range toward Santa Cruz, or at Santa Barbara, in summer. He also found them in September, 1860, in the higher Rocky Mountains, near the sources of the Columbia, in latitude 47°. In the fall the young and the old associate in families, all in the same dull-greenish plumage, feeding on the berries of the elder, and other shrubs, without the timidity they manifest in spring.

Mr. J. K. Lord states that he did not once meet with this species west of the Cascade Mountains. He found them on the Spokan Plains and at Colville, where they arrive in June. Male birds were the first to be seen. On their arrival they perch on the tops of the highest pine-trees, and continually utter a low piercing chirp. They soon after pair, and disappear in the forest. Where they breed, Mr. Lord was not able to discover, though he sought high and low for their nests. As he never succeeded in finding them, he conjectured that they must breed on the tops of the loftiest pine-trees. They all leave in September, but do not assemble in flocks.

These Tanagers breed at least as far to the south as Arizona, Dr. Coues having found them a summer resident near Fort Whipple, though rare. They arrive there in the middle of April, and leave late in September.

Mr. Salvin states that this Tanager was found between the volcanoes of Agua and Fuego, at an elevation of about five thousand feet. Specimens were also received from the Vera Paz.

Specimens of this species were taken near Oaxaca, Mexico, by Mr. Boncard, where they are winter residents.

Mr. Ridgway writes that he first met with these Tanagers in July, among the pines of the Sierra Nevada. There its sweet song first attracted his

attention, it being almost exactly similar to that of its eastern relative (*P. rubra*). Afterwards he continually met with it in wooded portions, whether among the willows and cottonwood of the river-valleys, or the cedars and piñons of the mountains. In May, 1868, among the willows and buffalo-berry thickets of the Truckee Valley, near Pyramid Lake, it was very abundant, in company with Grosbeaks and Orioles, feeding upon the buds of the grease-wood (*Olione*), and later in the summer among the cedars and nut-pines of East Humboldt Mountains, where the peculiar notes of the young arrested his attention, resembling the complaining notes of the Blue-bird, but louder and more distinct. In September he noticed them feeding, among the thickets bordering the streams, upon the pulpy fruit of the thorn-apple (*Cratogeomys*) that grew plentifully in the thickets. To the eastward it was continually met with, in all wooded portions, as far as they explored.

In manners it is very similar to the *P. rubra*. The songs of both birds are very nearly alike, being equally fine, but that of this species is more silvery in tone, and uttered more falteringly. Its usual note of *plit-it* is quite different from the *chip-a-ra'-ee* of the *P. rubra*.

He met with their nest and eggs at Parley's Park, Utah, June 9, 1869. The nest was on the extreme end of a horizontal branch of a pine, in a grove, flat, and with only a very slight depression, having a diameter of four and a half inches, with a height of only an inch. It was composed externally of only a few twigs and dry wiry stems, and lined almost entirely with fine vegetable rootlets.

The eggs, usually three in number, measure .95 by .66 of an inch. In form they are a rounded-oval. Their ground-color is a light bluish-green, sparingly speckled, chiefly at the larger end, with marking of amber, intermingled with a few dots of lilac.

Pyrranga hepatica, SWAINSON.

Pyrranga hepatica, SWAINSON, Phil. Mag. 1, 1827, 124. — SCLEATER, Pr. Zool. Soc. 1856, 124. — BAIRD, Birds N. Am. 1858, 302, pl. xxxi. — KENNERLY, 131. — RIDGWAY, Pr. A. N. S. 1869, 132. — COOPER, Orn. Cal. 1, 1870, 141. *Phainopepla hepatica*, CAL. Mus. Hein. 1851, 25. *Pyrranga azara*, WOODHOUSE, Sitgreave's Expl. Zuni, 1853, 82 (not of other authors).

SP. CHAR. — Length, 8.00"; wing, 4.12; tail, 3.36; culmen, .68; tarsus, .84. Second quill longest, first intermediate between fourth and fifth. Bill somewhat shorter than that of *astica*, but broader and higher at the base, becoming compressed toward the end; a distinct prominent tooth on commissure; its color plumbeous-black, paler, or more bluish plumbeous on lower mandible. *Male*. Head above brownish-red, paler anteriorly; rest of upper parts and sides brownish-ashy, tinged with reddish; edges of primaries, upper tail-coverts and tail, more reddish. Beneath, medially, fine light scarlet, most intense on the throat, growing gradually paler posteriorly. Lores and orbital region grayish-white; eye-lids pale-red; ear-coverts ashy-red.

Female. Above ashy-greenish-olivaceous, brightest on forehead; edges of wing-feathers, upper tail-coverts, and tail more ashy on the back; beneath nearly uniform olivaceous-yellow, purer medially; lores ashy; a superciliary stripe of olivaceous-yellow. *Young male* similar to the female, but forehead and crown olivaceous-orange, brightest anteriorly; superciliary stripe bright orange, whole throat, abdomen, and breast medially rich yellow, most intense, and tinged with orange-chrome on throat.

HAB. Mountain regions of Mexico and southern Rocky Mountains of United States. Oaxaca (Oct., SCLATER); Xalapa (SCL.); Guatemala (SCLATER); Vera Cruz (not to alpine regions, SUMICHRAST).

This species differs from all the others in the great restriction of the red; this being confined principally to the head above, and median lower surface, the lateral and upper parts being quite different reddish-ashy. The *shade* of red is also peculiar among the North American species, being very fine and light, of a red-lead cast, and most intense anteriorly.

HABITS. A single female specimen in full plumage of this beautiful bird was obtained by Dr. Woodhouse in the San Francisco Mountains of New Mexico. It was an adult female, and so far is the only one known to have been found within the limits of the United States. It is not rare in the highlands of Mexico, whence it probably extends into the mountainous portions of the United States.

Specimens have also been procured from Guatemala, and Mr. Boucard met with it at Choapam, a mountainous district in the State of Oaxaca, Mexico.

Nothing is known of its habits.

Pyranga æstiva, var. *æstiva* VIEILL.

SUMMER REDBIRD.

Muscicapa rubra, LINN. Syst. Nat. I, 1766, 326. *Tanagra æstiva*, GMELIN, I, 1788, 889. — WILSON, I, 1810, 95, pl. vi, f. 3. — AUD. Orn. Biog. I, 1831, 232; V, 1839, 518, pl. xlv. *Pyranga æstiva*, VIEILL. Nouv. Dict. XXVIII, 1819, 291. — BON. List, 1838. — IB. Conspectus, 1850. — AUD. Syn. 1839, 136. — IB. Birds Am. III, 1841, 222, pl. ccviii. — SCLATER, Pr. Zool. Soc. 1855, 156. — IB. 1856, 123. — BAIRD, Birds N. Am. 1858, 301. — HEERMANN, P. R. R. X, p. 17. — RIDGWAY, Pr. A. N. S. 1869, 130. — MAYNARD, Birds E. Mass. 1870, 109. *Phœnissoma æstiva*, SW. Birds, II, 1837, 284. *Phœnissoma æstiva*, CABANIS, Mus. Hein. 1851, 25. ? *Loxia virginica*, GMELIN, I, 1788, 849. (Male changing.) ? *Tanagra mississippiensis*, GMELIN, I, 1788, 889. *Pyranga mississippiensis*, MAX. Cab. Jour. VI, 1858, 272. *Tanagra variegata*, LATH. Ind. Orn. I, 1790, 422. (Male changing.) *Tangare du Mississippi*, BUFFON, Ois. V, 63, pl. enl. 741.

SP. CHAR. Bill nearly as long as the head, without any median tooth. Tail nearly even, or slightly rounded. *Male.* Vermilion-red; a little darker above, and brightest on the head. Quills brown, the outer webs like the back. Shafts only of the tail-feathers brown. Bill light horn-color, more yellowish at the edges. *Female.* Olive above, yellow beneath, with a tinge of reddish. Length, 7.20; wing, 3.75; tail, 3.00; culmen, .70, tarsus, .68.

HAB. Eastern Province United States, north to about 40°, though occasionally straying as far as Nova Scotia; west to borders of the plains. In winter, south through the whole of Middle America (except the Pacific coast) as far as Ecuador and Peru. Cuba; Jamaica.

In the accompanying cut we give outline of the bill of the two varieties of *Pyrranga astiva* as compared with a near ally, *P. sagra*, of South America. (13,190, *P. astiva*; 34,344, *P. astiva* var. *Cooperi*; 50,994, *P. sagra*.)

This species is one of wide distribution; its habitat in the United States including the "Eastern Province," north to Nova Scotia, and west toward the Rocky Mountains, along the streams watering the plains, through Texas, into Eastern Mexico, Central America, and the northern part of South America, as well as some of the West India islands.



In the different regions of its habitat the species undergoes considerable variations as regards shades of color and proportions. Specimens from Texas and Eastern Mexico exhibit a decided tendency to longer bills and more slender forms than those of the Eastern United

States; the tails longer, and colors rather purer. In Central America and New Granada the species acquires the greatest perfection in the intensity and purity of the red tints, all specimens being in this respect noticeably different from those of any other region.¹

Specimens in the collection of the Smithsonian Institution, from Peru (39,849 ♂, 39,849 ♀, and 39,850 ♀, head-waters Huallaga River), are undistinguishable from those killed in the eastern United States.

The young male exhibits a variegated plumage, the red appearing in patches upon the other colors of the female; in its changing plumage, the red generally predominates on the head, and often individuals may be seen with none anywhere else. In this condition there appears to be a great resemblance to the *P. erythrocephala* (see synoptical table), judging from the description, but which appears to be considerably smaller, and perhaps has the red of the head more continuous and sharply defined.

The young male in first summer resembles the female, but has the yellow tints deeper, the lower tail-coverts approaching orange.

HABITS. The Summer Redbird is found chiefly in the Southern States, as far north as Southern New Jersey and Illinois. Mr. Audubon speaks of their occurring in Massachusetts, but Mr. Lawrence has never known of their having been found farther north than the Magnolia Swamps near Atlantic City, N. J. One or two recent instances of the capture of these birds in Massachusetts, as also in New Brunswick and Nova Scotia, have occurred, but these must be regarded as purely accidental.

¹ Of this highly colored form, the average length of five specimens is 7.55; in twelve the average is, wing, 3.67; tail, 2.86; culmen, .67. The bill appears to be slightly darker than in North American examples.

This species is said by Mr. Salvin to enjoy an almost universal range throughout Guatemala. It occurred in December at the mouth of the Rio Dulce, in the pine ridges near Quisigua, and along the whole road from Isabel to Guatemala, a distance of eighty leagues.

Mr. C. W. Wyatt met with these birds also, in all varieties of plumage, throughout Colombia, South America, at Herradura, Cocuta Valley, and Canta. Mr. Boucard obtained them at Plaza Vicente, Mexico. Dr. Woodhouse observed this species throughout the Indian Territory, Texas, and New Mexico, where it seemed solitary in its habits, frequenting the thick scrubby timber. It has been known to breed at various points in Florida, Georgia, South Carolina, Louisiana, and Texas. To the northward it breeds more or less abundantly, as far as Washington, D. C., on the east, and Southern Illinois and Kansas on the west, being much more common in the Mississippi Valley than in the States on the Atlantic in the same parallel of latitude.

Mr. Dresser found it quite common about San Antonio, Texas, during the summer season, arriving there about the middle of April, which is just about the period at which the three specimens were taken near Boston. It is comparatively rare in Pennsylvania, though abundant in the southern counties of New Jersey, and in Delaware, Eastern Maryland, and Virginia. It is also abundant in the Carolinas, in Georgia, Florida, and the Gulf States.

Wilson, in describing the nest and eggs of this species, has evidently confounded them and some of their habits with those of the Blue Grosbeak. Their eggs are not light-blue, nor are the nests, so far as I know, as described by him. Audubon and Nuttall copy substantially his errors.

The food of this species during the spring and early summer is chiefly various kinds of large coleopterous insects, bees, wasps, and others. Later in the season, when whortleberries are ripe, they feed chiefly on these and other small fruit. In taking its food it rarely alights on the ground, but prefers to capture its insects while on the wing.

The usual note of this bird, which Mr. Audubon pronounces unmusical, resembles the sounds "*chicky-chucky-chuck*." The same writer states that during the spring this bird sings pleasantly for nearly half an hour in succession, that its song resembles that of the Red-eyed Vireo, and that its notes are sweeter and more varied and nearly equal to those of the Orchard Oriole.

The late Dr. Gerhardt of Varnell's Station, in Northern Georgia, informed me that these birds are quite common in that section of country. The nest is usually built on one of the lower limbs of a post-oak, or in a pine sapling, at a height of from six to twenty feet. They are usually constructed toward the extremity of the limb, and so far from the trunk as to be very difficult of access. They are generally built from the middle to the end of May. The eggs are four in number.

In Southern Illinois, according to Mr. Ridgway, the Summer Redbird arrives about the 20th of April, staying until the last of September. It is more abundant than the Scarlet Tanager, and much less retiring in its habits,

frequenting the open groves instead of the deeper woods and the forests of the bottom-lands, being especially attached to the parks and groves within the towns. From its similarity in appearance, manners, and notes to the Scarlet Tanager, it is seldom distinguished by the common people from that bird, and those who notice the difference in color between the two generally consider this the younger stage of plumage of the black-winged species. Its song is said to be somewhat after the style of the Robin, but in a firmer tone and more continued. It differs from the song of the *P. rubra* in being more vigorous, and delivered in a manner less faltering. Its ordinary note of anxiety when the nest is approached is a peculiar *pu-chip'it-tūt-tūt-tūt*, very different from the weaker *chip'-ul, rā-rēē* of the *P. rubra*. The nest is placed on a low horizontal or drooping branch, near its extremity, the tree being generally an oak, or sometimes a hickory, and situated near the roadside or at the edge of a grove. In its construction it is described as very thin, though by no means frail, permitting the eggs to be seen through the interstices from below. Mr. Ridgway never found more than three eggs in one nest.

A nest of this species (Smith. Coll., 589) from Prairie Mer Rouge, Louisiana, has a diameter of four inches and a height of two. Like all the nests of this family, the cavity is very shallow, its deepest depression being hardly half an inch. So far from corresponding with the descriptions generally given of it, this nest is well and even strongly put together, although a portion of the base and some of the external parts are somewhat openly interwoven, as if for ventilation. These materials are fragments of plants, catkins, leaves, stems, and grasses. These seem to constitute a distinct part of the nest, and are of unequal thicknesses in different parts of the structure. Within this external frame is a much more artistic and elaborately interwoven basket, composed entirely of fine, slender, and dry grasses, homogeneous in character, and evidently gathered just at the time its seed was ripening. It is of a bright straw-yellow, and forms the whole internal portion of the nest.

The eggs vary somewhat in size and shape, from an oblong to a rounded oval. Their length is from .80 of an inch to an inch, and their breadth averages .68. Their color is a bright light shade of emerald-green, spotted, marbled, dotted, and blotched with various shades of lilac, brownish-purple, and dark-brown. These are generally well diffused equally over the entire egg.

Pyranga æstiva, var. *cooperi*, RIDGWAY.

Pyranga cooperi, RIDGWAY, Pr. Ac. Nat. Sc. Philad. June, 1869, p. 130, fig. . — COOPER, Orn. Cal. 1, 1870, 142.

SP. CHAR. Length, 8.60 (fresh specimen); extent, 13.50; wing, 4.24; tail, 3.68; culmen, .84; tarsus, .80. *Male*. Generally rich pure vermillion, similar to that of *æstiva*, but lighter, brighter than in eastern examples, and less rosaceous than in Central American specimens. Upper surface scarcely darker than lower, the head above being hardly

different from the throat, and abruptly lighter than the back, which, with the wings and tail, is of a much lighter dusky-red than in *æstiva*; exposed tips of primaries pure slaty-umber, primaries faintly margined terminally with paler (in the type, this character is not apparent, owing to the feathers being somewhat worn; in other specimens, however, it is quite a noticeable feature, although possibly not to be entirely relied on).

Female. Above orange-olivaceous, beneath more light yellowish, purest medially; crissum richer yellow than other lower parts, being in some individuals (young males?) intense Indian-yellow, with the inner webs of the tail-feathers margined with the same; quite distinct line of orange-yellow over the lores.

HAB. Upper Rio Grande and Colorado region of Southern Middle Province; south, in winter, along Pacific coast of Mexico as far as Colima.

This bird, quite different from Eastern *æstiva*, is, however, probably only a representative form of the same species in the Colorado and Upper Rio Grande region, migrating south in winter, through Western Mexico to Colima, as specimens from Texas and Middle Mexico appear to be quite intermediate, at least in form.

HABITS. This is a new form, whose claim to distinctness was first made known by Mr. Ridgway, in 1869. In appearance, it most resembles the *P. æstiva*, but is larger. It has been found in the Middle Province of the United States, from Fort Mohave at the north, to Colima and Mazatlan in Mexico.

Dr. Cooper found this bird quite common near Fort Mohave, after April 25, in the Colorado Valley, latitude 35°. They chiefly frequented the tall cottonwood, feeding on insects, and occasionally flew down to the *Larrea* bushes after a kind of bee found on them. He states also that they have a call-note sounding like the words *ke-dik*, which, in the language of the Mojave Indians, signifies "come here." They sing in a loud, clear tone, and in a style much like that of the Robin, but with a power of ventriloquism which makes the sound appear much more distant than it really is. The only specimens of this species known to have been obtained in the United States were taken at Los Pinos, New Mexico, by Dr. Coues, and at Fort Mohave by Dr. Cooper. Other specimens have been procured from Western Mexico.

FAMILY FRINGILLIDÆ. — THE FINCHES.

CHAR. Primaries nine. Bill very short, abruptly conical, and robust. Commissure strongly angulated at base of bill. Tarsi scutellate anteriorly, but the sides with two undivided plates meeting behind along the median line, as a sharp posterior ridge. Eyes hazel or brown, except in *Pipilo*, where they are reddish or yellowish. Nest and eggs very variable as to character and situation.

I still labor under the inability expressed in *Birds of North America* (p. 406), in 1858, to satisfactorily define and limit the subfamilies and genera of the *Fringillidæ* of North America, and can only hope that by the aid of the figures of the present work no material difficulty will be experienced in determining the species. The distinctions from the allied families are also difficult to draw with precision. This is especially the case with the *Tanagridæ*, where we have much the same external anatomy, including the bill, nearly all the varying peculiarities of this member in the one being repeated in the other. — S. F. B.

All the United States species may be provisionally divided into four subfamilies (the European House-Sparrow forming a fifth), briefly characterizable as follows:—

Coccothraustinæ. Bill variable, from enormously large to quite small; the base of the upper mandible almost always provided with a close-pressed fringe of bristly feathers (more or less conspicuous) concealing the nostrils. Wings very long and pointed, usually one half to one third longer than the forked or emarginate tail. Tarsi short.

Pyrgitinæ. Bill robust, swollen, arched above without distinct ridge. Lower mandible at base narrower than upper. Nostrils covered; side of maxilla with stiff appressed bristles. Tarsi short, not longer than middle toe. Tail shorter than the somewhat pointed wings. Back streaked; under parts not streaked.

Spizellinæ. Embracing all the plain-colored sparrow-like species marked with longitudinal stripes. Bill conical, always rather small; both mandibles about equal. Tarsi lengthened. Wings and tail variable. Lateral claws never reaching beyond the base of the middle claw.

Passerellinæ. Sparrow-like species, with triangular spots beneath. Legs, toes, and claws very stout; the lateral claws reaching nearly to the end of the middle ones.

Spizinaæ. Brightly colored species, usually without streaks. Bill usually very large and much curved; lower mandible wider than the upper. Wings moderately long. Tail variable.

SUBFAMILY COCCOTHTRAUSTINÆ. — THE TRUE FINCHES.

CHAR. Wings very long and much pointed: generally one third longer than the more or less forked tail; first quill usually nearly as long as or longer than the second. Tertiaries but little longer, or equal to the secondaries, and always much exceeded by the primaries. Bill very variable in shape and size, the upper mandible, however, as broad as the lower; nostrils rather more lateral than usual; and always more or less concealed by a series of small bristly feathers applied along the base of the upper mandible; no bristles

at the base of the bill. Feet short and rather weak. Hind claw usually considerably longer than the middle anterior one; sometimes nearly the same size.

In the preceding diagnosis I have combined a number of forms, all agreeing in the length and acuteness of the wing, the bristly feathers along the base of the bill, the absence of conspicuous bristles on the sides of the mouth, and the shortness of the feet. They are all strongly marked and brightly colored birds, and usually belong to the more northern regions.

The bill is very variable, even in the same genus, and its shape is to a considerable extent of specific rather than of generic importance. The fringe of short bristles along the base of the bill, concealing the nostrils, is not appreciable in *Plectrophanes* (except in *P. nivalis*), but the other characteristics given above are all present.

Genera.

A. Bill enormously large and stout; the lateral outline as long as that of the skull. Culmen gently curved.

Colors green, yellow, and black.

Hesperiphona. First quill equal to the second. Wings one half longer than the tail. Lateral claws equal, reaching to the base of the middle claw. Claws much curved, obtuse; hinder one but little longer than the middle.

B. Bill smaller, with the culmen more or less curved; the lateral outline not so long as the skull. Wings about one third longer than the tail, or a little more; first quill shorter than the second. Claws considerably curved and thickened; hinder most so, and almost inappreciably longer or even shorter than the middle anterior one. Tarsus shorter than the middle toes. Lateral toes unequal.

a. Colors red, gray, and black, never streaked.

Pyrrhula. Bill excessively swollen; as broad and as high as long, not half length of head; upper outline much curved. Tail-coverts covering two thirds the tail, which is nearly even, middle and hinder claws about equal.

b. Colors red and gray, or streaked brown and white.

Pinicola. Bill moderately swollen; longer than high or broad, upper outlines much curved; the tip hooked. Tail-coverts reaching over basal half of tail, which is nearly even. Middle claw longer than hind; outer lateral claw extending beyond base of middle (reaching to it in *Pyrrhula* and *Carpodacus*). ♀ and *juv.* not streaked.

Carpodacus. Bill variable, always more or less curved and swollen; longer than high or broad; the tip not hooked. Tail-coverts reaching over two thirds the tail, which is decidedly forked. Middle and hind claw about equal. ♀ and *juv.* streaked.

c. Colors black and yellow.

Chrysomitris. Bill nearly straight. Hind claw stouter and more curved, but scarcely longer than the middle anterior one. Outer lateral toe reaching a little beyond the base of the middle claw; shorter than the hind toe. Wings longer and more pointed. Tail quite deeply forked.

C. Hind claw considerably longer than the middle anterior one, with about the same curvature; claws attenuated towards the point, and acute. Lateral toes about equal. Wings usually almost one half longer than the tail, which is deeply forked. Tarsus shorter than middle toe.

a. Points of mandibles overlapping.

Curvirostra. Tarsus shorter than middle toe. Bill much compressed, elongate falcate, with the points crossing like the blades of scissors. Claws very large; lateral extending beyond the base of the middle. Colors red or gray. Streaked in *juv.*

b. Points of mandibles not overlapping.

Ægiothus. Tarsus equal to the middle toe. Bill very acutely conical; outlines and commissure perfectly straight. Lateral toes reaching beyond the base of the middle one. No ridge on the side of the lower mandible. Streaked; a crimson pileum (except in one species).

Leucosticte. Culmen slightly decurved; commissure a little concave. Bill obtusely conical; not sharp-pointed. A conspicuous ridge on the side of the lower mandible. Claws large; the lateral not reaching beyond the base of the middle one. Colors red and brown.

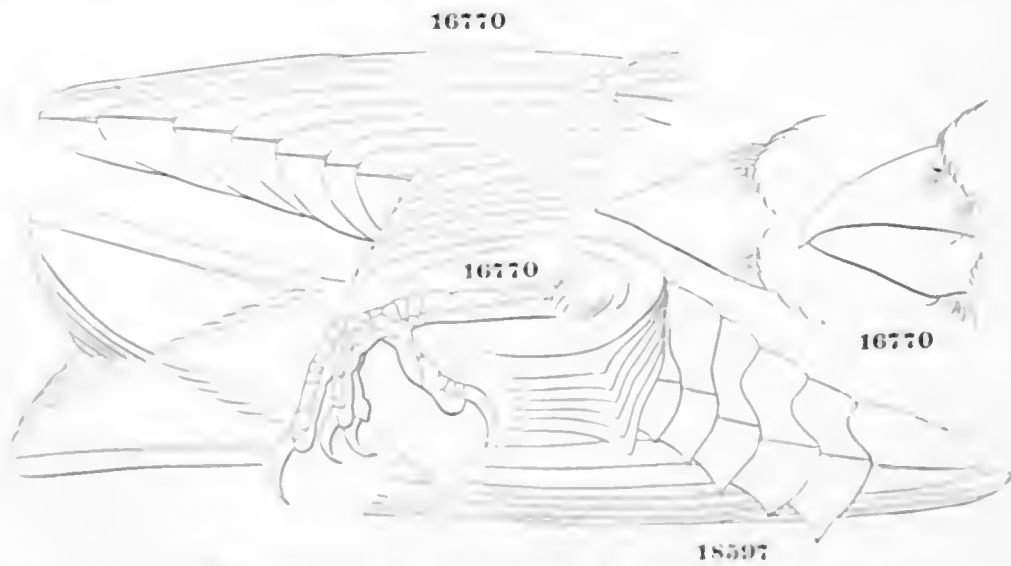
D. Hind claw much the largest; decidedly less curved than the middle anterior one. Tarsus longer than the middle toe. Lateral toes equal; reaching about to the base of the middle claw. Hind toe as long or longer than the middle one. Bill very variable; always more or less curved and blunted. Palate somewhat tuberculate; margins of lower jaw much inflexed. Tail slightly emarginate or even. Wings one half longer than the tail. First quill as long as the second.

Plectrophanes. Colors black and white. With or without rufous nape or elbows. Much white on tail.

GENUS **HESPERIPHONA**, BONAP.

Hesperiphona, BONAP. Comptes Rendus, XXXI, Sept. 1850, 424. (Type, *Fringilla vespertina*.)

GEN. CHAR. Bill largest and stoutest of all the United States fringilline birds. Upper mandible much vaulted; culmen nearly straight, but arched towards the tip; commissure concave. Lower jaw very large, but not broader than the upper, nor extending back, as in



16770, *Hesperiphona vespertina*. 18597, *Coccothraustes vulgaris*.

Guiraca; considerably lower than the upper jaw. Gonys unusually long. Feet short; tarsus less than the middle toe; lateral toes nearly equal, and reaching to the base of the middle

claw. Claws much curved, stout, and compressed. Wings very long and pointed, reaching beyond the middle of the tail. Primaries much longer than the nearly equal secondaries and tertials: outer two quills longest; the others rapidly graduated. Tail slightly forked; scarcely more than two thirds the length of the wings, its coverts covering nearly three fourths of its extent. Nest and eggs unknown.

This genus is allied to the European *Coccothraustes*, but differs in wanting the curious expansion of the inner secondaries, as shown in Fig. 18,597. Species are said to occur in Asia, but we have only two in America, — one peculiar to Mexico (*H. abeillii*), the other *H. vespertina*.

The American species may be thus distinguished: —

Species and Varieties.

COMMON CHARACTERS. Wings and tail black, the tertials with more or less whitish; body concolored, with more or less of a yellowish tinge. ♂. Body yellowish, more olivaceous above; no white at base of primaries. ♀. Body grayish, merely tinged with yellow; a white spot at base of primaries. Nest and eggs unknown.

1. *H. vespertina*. ♂. Head olivaceous-sepia, with a yellow frontal crescent and a black occipital patch. ♀. Crown plumbeous-brown; a dusky "bridle" down side of the throat; upper tail-coverts tipped with a white spot.

Yellow frontal crescent broad, as wide as the black behind it; inner webs of tertials partially black; secondaries and inner webs of tail-feathers tipped with white. *Hab.* Northern mountain regions of United States and interior of British America . . . var. *vespertina*.

Yellow frontal crescent narrow, less than half as wide as the black behind it; inner webs of the tertials without any black; secondaries and inner webs of tail-feathers without white tips. *Hab.* Southern Rocky Mountains of United States, and mountains of Mexico.

var. *montana*.

2. *H. abeillii*.¹ ♂. Head entirely black, sharply defined. ♀. Crown (only) black; no dusky "bridle" on side of throat; upper tail-coverts without white tips. *Hab.* Mountains of Guatemala and Southern Mexico.

Hesperiphona vespertina, BONAP.

EVENING GROSBEAK.

Fringilla vespertina. COOPER, Annals New York Lyceum, N. H. I, II, 1825, 220 (Sault St. Marie). — AUD. Orn. Biog. IV, 1838, 515; V, 235, pl. cccxxiii, cccxxiv. *Fringilla* (*Coccothraustes*) *vespertina*, BON. Syn. 1828, 113. — IB. Am. Orn. II, pl. xv. *Coccothraustes vespertina*, SW. F. Bor. Am. II, 1831, 269. — AUD. Birds Am. III, 1841, 217, pl. ccvii. *Hesperiphona vespertina*, BON. Comptes Rendus, XXXI, Sept. 1850, 424. — BAIRD, Birds N. Am. 1858, 409. — COOPER & SUCKLEY, 195. — COOPER, Orn. Cal. I, 174. *Coccothraustes bonapartii*, LESSON, Illust. de Zoöl. 1834, pl. xxxiv. ♀ (Melville Island). *Loxia bonapartii*, LESS. Bull. Sc. tab. xxv. *Hesperiphona vespertina*, var. *vespertina*, RIDGWAY (new variety from Mexico and the southern Rocky Mountains).

¹ *Coccothraustes abeillii*, SCLATER, Catal. Am. B. 123 (*Guiraca abeillii*, LESSON).

SP. CHAN. Bill yellowish-green, dusky at the base. Anterior half of the body dusky yellowish-olive, shading into yellow to the rump above, and the under tail-coverts below. Outer scapulars, a broad frontal band continued on each side over the eye, axillaries, and middle of under wing-coverts yellow. Feathers along the extreme base of the bill, the crown, tibia, wings, upper tail-coverts, and tail black; inner greater wing-coverts and tertaries white. Length, 7.30; wing, 4.30; tail, 2.75.

The female differs in having the head of a dull olivaceous-brown, which color also glosses the back. The yellow of the rump and other parts is replaced by a yellowish-ash. The upper tail-coverts are spotted with white. The white of the wing is much restricted. There is an obscure blackish line on each side of the chin.

HAB. (Var. *vespertina*.) Pacific coast to Rocky Mountains; Northern America east to Lake Superior. (Var. *montana*.) Southern Rocky Mountains of United States into Mexico; Orizaba! (SELAUER, 1860, 251); Vera Cruz (alpine regions, breeding) SUMMIBAST, Pr. Bost. Soc. I, 550; Guatemala, SALVIS.

The variety with broad frontal band and increased amount of white appears to characterize Northern specimens, while that with narrow frontlet and the greatest amount of black is found in Guatemala, Mexico, and the southern Rocky Mountains, and may be called *montana*.



Hesperiphona vespertina

In size it is also a little smaller. Specimens from Mirador (where breeding) and those from New Mexico are nearly identical in size, proportions, and colors.

HABITS. This remarkable Grosbeak was first described by Mr. William Cooper, from specimens obtained by Mr. Schoolcraft in April, 1823, near the Sault Sainte Marie, in Michigan. Sir John Richardson soon after found it to be a common inhabitant of the maple groves on the plains of the Saskatchewan, where it is

called by the Indians the "Sugar-Bird." He states that it frequents the borders of Lake Superior also, and the eastern declivity of the Rocky Mountains, in latitude 56°.

Captain Blakiston did not find this Grosbeak on the Saskatchewan during the summer, but only noticed it there during the winter. He saw none after the 22d of April, and not again until the middle of November. They were seen in company with the Pine Grosbeak, feeding on the keys of the ash-leaved maple. He adds that it has a sharp clear note in winter, and is an active bird.

Dr. Cooper, in his Notes on the Zoology of Washington Territory, states that this species is a common resident in its forests, but adds that as it frequents the summits of the tallest trees, its habits have been but little observed. In January, 1854, during a snow-storm, a flock descended to some

low bushes at Vancouver, and began to eat the seeds. Since then he had only seen them flying high among the tops of the poplars, upon the seeds of which they feed. They were uttering their loud, shrill call-notes as they flew.

The same writer, in his Report on the birds of California, makes mention of the occurrence of this Grosbeak at Michigan Bluffs, in Placer County, in about latitude 39°. Specimens were obtained by Mr. F. Gruber, and were probably the variety designated as *montana*. The same form doubtless occurs along the summits of the Sierra Nevada, and they have been traced among the Rocky Mountains to Fort Thorn in New Mexico.

These birds do not come down near the sea-coast even at the mouth of the Columbia, and in California have not been met with in the Coast Range. They are said to feed chiefly on the seeds of the pine, spruce, and cotton-wood trees, occasionally seeking other seeds near the ground. They are silent when feeding, but utter a loud call-note as they fly from place to place. In spring, Dr. Cooper states, they have a short but melodious song, resembling that of the Robin or Black-headed Grosbeak. He afterwards met with a flock in the winter near Santa Cruz, where they remained until the end of April. Their favorite resort was a small grove of alders and willows, close to the town, where their loud call-notes could be heard at all times of the day, though he never heard them sing. In the early spring their favorite food was the young leaves of various wild plants that grew under the trees. They also fed on the buds of the *Alnus*, and frequented the large pear-trees in the old mission garden. They were very tame, and allowed an approach to within a few yards, when feeding. Mr. Townsend, in 1836, found this Grosbeak abundant about the Columbia River. Late in May they were quite numerous in the pine woods. They were very unsuspicious and tame. Under the impression that these birds were only musical towards night, they have been styled the Evening Grosbeak. But this, according to Mr. Townsend, is a misnomer. He also contraverts several other statements made in reference to their habits. He found them remarkably noisy from morning until night, when they quietly retire like other birds, and are not heard from until the next day-dawn. They go in large flocks, and are rarely met with singly. As they feed upon the seeds of the pine and other trees, they proceed by a succession of hops to the extremities of the branches. They also feed largely on the larvæ of the large black ant, for which object they frequent the tops of the low oaks on the edges of the forests. Their ordinary voice is said to be a single screaming note, uttered while feeding. At times, about midday, the male attempts a song, which Mr. Townsend describes as a miserable failure. It is a single note, a warbling call like the first note of the Robin, but not so sweet, and suddenly checked, as if the performer were out of breath.

Mr. Sumichrast met with the variety of this species designated as *montana*, May, 1857, in the pine woods of Monte Alto, about twelve leagues from Mexico; and although he has never found it in the alpine region of Vera

Cruz, he thinks it probable it will be found to be a resident of that district.

Lake Superior has been stated to be its most eastern point of occurrence, but, though this may be true as a general rule, several instances of the accidental appearance of this nomadic species much farther to the east are known. On February 14, 1871, Mr. Kumlien, while out in the woods with his son, saw a small flock of these birds in Dane County, Wisconsin. There were six of them, but, having no gun, he did not procure any. Later in the season he again met with and secured specimens. In the following March, Dr. Hoy of Racine also obtained several near that city. He also informs me that during the winter of 1870-71 there were large flocks of these birds near Freeport, Ill. One person procured twenty-four specimens. One season he noticed them as late as May. They frequent the maple woods, and feed on the seeds fallen on the ground. They also eat the buds of the wild cherry. Their visits are made at irregular intervals. In some years not a single individual can be seen, while in others they make their appearance in December and continue through the whole winter.

Specimens have also been obtained near Cleveland, Ohio, and at Hamilton, Canada; and Mr. Thomas McIlwraith states that Mr. T. J. Cottle of Woodstock, Ontario, shot several of these birds in his orchard in the month of May. They were quite numerous, and remained about the place several days.

GENUS *PINICOLA*, VIEILL.

Pinicola, VIEILLOT, Ois. Am. Sept. 1, 1807, 4, pl. i, f. 13.

"*Strobilophaga*, VIEILLOT, Analyse, 1816."

"*Corythus*, CUVIER, R. An. 1817."

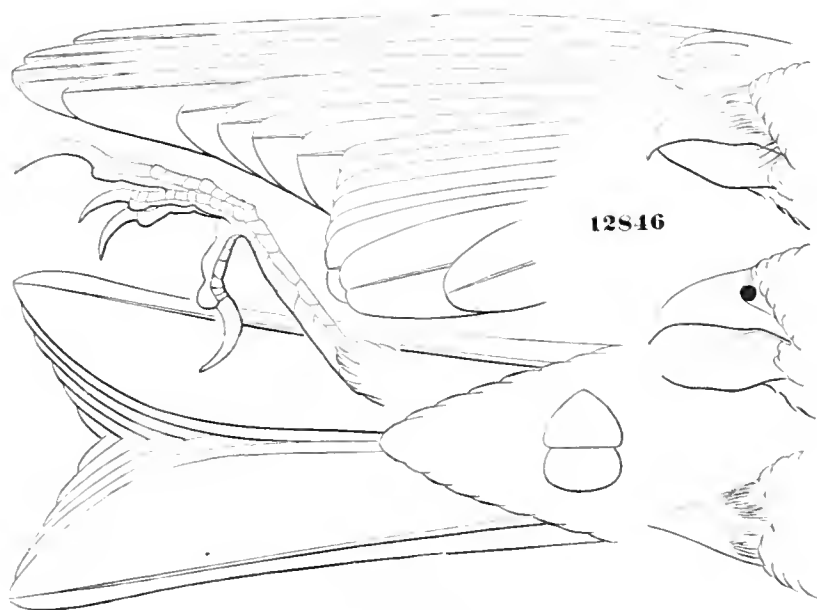
CHAR. Bill short, nearly as high as long; upper outline much curved from the base; the margins of the mandibles rounded; the commissure gently concave, and abruptly deflexed at the tip; base of the upper mandible much concealed by the bristly feathers covering the basal third. Tarsus rather shorter than the middle toe; lateral toes short, but their long claws reach the base of the middle one, which is longer than the hind claw. Wings moderate; the first quill rather shorter than the second, third, and fourth. Tail rather shorter than the wings; nearly even.

Of this genus one species is found in northern America, and is now considered as identical with that belonging to the northern regions of the Old World.

Pinicola enucleator, CABANIS.**THE PINE GROSBEAK.**

Coccothraustes canadensis, BRISSON, Orn. III, 1760, 250, pl. xii, f. 3. "*Corythus canadensis*, BREHM, Vögel Deutschlands" (1831?). *Pinicola canadensis*, CABANIS, Mus. Hein. 1851, 167. — BAIRD, Birds N. Am. 1858, 410. — DALL & BANNISTER, Tr. Chic. Ac. Sc. I, 1869, 281 (Alaska). — COOPER, Orn. Cal. I, 151. — SAMUELS, Birds N. Eng. 283. *Pinicola americana* (CAB. MSS.), Bp. Consp. 1850, 528. *Loxia enucleator*, LINN. Syst. Nat. I, 299. — FORST. Phil. Trans. LXII, 1772, 383. — WILS. Am. Orn. I, 1808, 80, pl. v. *Pyrrhula enucleator*, AUD. Orn. Biog. IV, 1838, 414, pl. ccelviii. *Corythus enucleator*, BONAP. List. 1838. — AUD. Syn. 127. — Ib. Birds Am. III, 1841, 179, pl. excix. — BON. & SCHLEGEL, Mon. des Loxiens, 1850, 9, pl. ix, xi, xii. — DEGLAND & GERBE, Orn. Europ. I, 258. *Pinicola enucleator*, CABANIS, Mus. Hein. I, 1851, 167.

SP. CHAR. Bill and legs black. *Male*. General color light carmine-red or rose, not continuous above, however, except on the head; the feathers showing brownish centres on the back, where, too, the red is darker. Loral region, base of lower jaw all round, sides (under the wing), abdomen, and posterior part of the body, with under tail-coverts, ashy,



Pinicola enucleator.

whitest behind. Wing with two white bands across the tips of the greater and middle coverts; the outer edges of the quills also white, broadest on the tertiaries, on secondaries tinged with red. *Female* ashy, brownish above, tinged with greenish-yellow beneath; top of head, rump, and upper tail-coverts brownish gamboge-yellow. Wings much as in the male. Length about 8.50; wing, 4.50; tail, 4.00. *Young* like female, but more ashy.

HAB. Arctic America, south to United States in severe winters.

A careful comparison of American with European specimens of the Pine Grosbeak does not present any tangible point of distinction, and it appears inexpedient to preserve the name of *canadensis* for the bird of the New World. There is considerable difference in the size, the proportions of the bill, and the color of different specimens, but none of appreciable geographical value.

A considerable number of specimens from Kodiak (perhaps to be found in other localities on the northwest coast) compared with eastern have conspicuously larger bills, almost equal to *cardinalis* in this respect. In No. 54,465 the length from forehead is .80; from nostril, .50; from gape, .66; gonys, .40;



Pinicola enucleator

greatest depth, .51. In a Brooklyn skin 12,846 the same measurements are from forehead, .60; from nostril, .44; from gape, .50; gonys, .34; greatest depth, .40. A Saskatchewan skin is intermediate. A European specimen has the bill as long as that from Kodiak, but less swollen. A Himalayan species (*P. subhimachalus*) is much smaller, and differently colored.

These Kodiak specimens approach the European bird more nearly in form of the bill, in which there is a tendency to a more abruptly hooked upper mandible than in the birds from the eastern portions of British America. As a general thing, the

red tint is brighter in American than in European birds.

HABITS. The Pine Grosbeak is, to a large extent, a resident of the portions of North America north of the United States. In the northern parts of New York, Vermont, New Hampshire, and Maine, as well as in western America, it is found throughout the year in the dark evergreen forests. In the winter it is an irregular visitant as far south as Philadelphia, being in some seasons very abundant, and again for several winters quite rare.

Mr. Boardman mentions it as abundant, in the winter, about Calais, and Mr. Verrill gives it as quite common in the vicinity of Norway. It is found every winter more or less frequently in Eastern Massachusetts, though Mr. Allen regards it as rare in the vicinity of Springfield. It is not cited by Dr. Cooper as a bird of Washington Territory, but he mentions it as not uncommon near the summits of the Sierra Nevada, latitude 39°, in September. It probably breeds there, as he found two birds in that region in the young plumage. They were feeding on spruce seeds when he first saw them, and lingered even after their companions had been shot, and allowed him to approach within a few feet of them.

Mr. R. Brown (1868) states that during the winter of 1866, while snow was lying on the ground, two pairs of this species were shot at Fort Rupert, Vancouver Island.

Wilson met with occasional specimens of these birds in the vicinity of Philadelphia, generally in immature plumage, and kept one several months, to note any change in its plumage. In the summer it lost all its red colors

and became of a greenish-yellow. In May and June, its song, though not so loud as that of some birds, was extremely clear, mellow, and sweet. This song it warbled out for the whole morning, and also imitated the notes of a Cardinal, that hung near it. It became exceedingly tame and familiar, and when in want of food or water, uttered a continual melancholy and anxious note.

In the winter of 1835, and for several following seasons, these birds were exceedingly abundant in the vicinity of Boston. They appeared early in December, and remained until quite late in March, feeding chiefly on the berries of the red cedar. They were so unsuspecting and familiar that it was often possible to capture them alive in butterfly-nets, and to knock them down with poles. Large numbers were destroyed and brought to market, and many were taken alive and caged. They were tame, but unhappy in confinement, uttering mournful cries as the warm weather approached. In the winter of 1869-70 they again made their appearance in extraordinary numbers, in a few localities on the sea-coast of Massachusetts, where they did considerable damage to the fruit-buds of the apple and pear.

Sir John Richardson states that this bird was not observed by his expedition higher than the 60th parallel. It lives, for the most part, a very retired life, in the deepest recesses of the pine forests, where it passes the entire year, having been found by Mr. Drage, near York Fort, on the 25th of January, 1747. Richardson adds that it builds its nest on the lower branches of trees, and feeds chiefly on the seeds of the white spruce.

Dr. Coues speaks of it as not at all rare along the coast of Labrador, where he obtained several specimens. It was confined entirely to the thick woods and patches of scrubby juniper. A female remained unconcernedly on a twig after he had shot her mate, uttering continually a low soft *shep*, like that of the Fox-colored Sparrow. Another note was a prolonged whirring chirrup, uttered in a rather low tone, apparently a note of recognition.

A lady resident in Newfoundland informed Mr. Audubon that she had kept several of these Grosbeaks in confinement, that they soon became very familiar, would sing during the night, feeding, during the summer, on all kinds of fruit and berries, and in the winter on different seeds. Mr. Audubon also often observed that, when firing at one of their number, the others, instead of flying away, would move towards him, often to within a few feet, and remain on the lower branches of the trees, gazing at him in curiosity, entirely unmingled with any sense of their own danger. Mr. Audubon quotes from Mr. McCulloch, of Pictou, an interesting account of the habits of one of these birds, kept in confinement. The winter had been very severe, the storms violent, and, in consequence of the depth of snow, many birds had perished from hunger and cold. The Grosbeaks, driven from the woods, sought food around the barns and outhouses, and crowded the streets of Pictou. One of these, taken in a starving condition, soon became so tame as to feed from his hand, lived at large in his chamber, and would awaken him

early in the morning to receive his allowance of seed. As spring approached, he began to whistle in the morning, and his notes were exceedingly rich and full. As the time came when his mates were moving north, his familiarity entirely disappeared, and he sought constantly, by day and by night, to escape by dashing against the window-panes, and during the day filled the house with his piteous wailing cries, refusing his food, so that in pity he was let out. But no sooner was he thus released than he seemed indifferent to the privilege, and kept about the door so persistently that he had at last to be driven away, lest some accident should befall him.

The Pine Grosbeaks were found by Bischoff at Sitka and at Kodiak, and are said by Mr. Dall to be extremely common near Nulato, and wherever there are trees throughout the Yukon Territory. They frequent groves of willow and poplar, near open places, and especially the water-side in winter, and in summer seek more retired places for breeding. Their crops, when opened, were always found to contain the hearts of the buds of poplars, with the external coverings carefully rejected, and were never found to include anything else. Mr. Dall noticed no song, only a twitter and a long chirp. He found them excellent as an article of food. European eggs of this bird, taken by Mr. Wolley in Finland in 1858, are of an oblong-oval shape, and have a light slate-colored ground with a marked tinge of greenish, broadly marked and plashed with faint, subdued cloudy patches of brownish-purple, and sparingly spotted, chiefly at the larger end, with blackish-brown and dark purple. They measure 1.02 inches in length by .70 in breadth.

No positively identified eggs of the American Pine Grosbeak are as yet known in collections, but Mr. Boardman has found a nest, near Calais, about which there can be little doubt, although the parent was not seen. This was placed in an alder-bush in a wet meadow, and was about four feet from the ground. It was composed entirely of coarse green mosses. The eggs were two, and were not distinguishable from those of the European *cuculator*.

GENUS **PYRRHULA**, PALLAS.

Pyrrhula, "BRISSON, Orn. 1760." PALLAS.

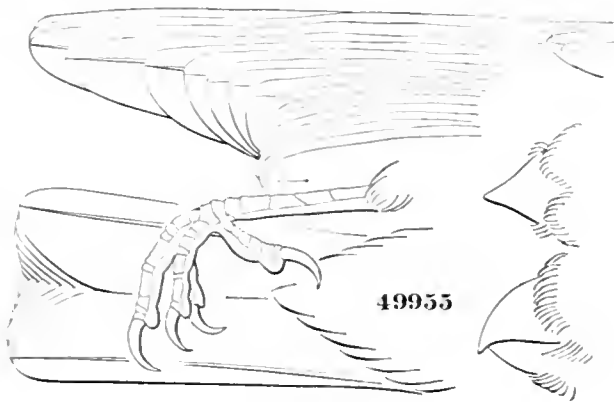
GEN. CHAR. Bill very short and thick, higher than long, swollen. Lower jaw broader at base than upper jaw, and broader than length of gonys. Nostrils and base of mandible concealed by a thick tuft of rather soft feathers. Tail nearly even, shorter than the pointed wings, upper coverts reaching over nearly two thirds the tail. Middle and hind claws about equal.

This genus is closely related to *Pinicola*, but has a more swollen and much shorter bill, the lower jaw disproportionately larger, and wider than long along gonys, instead of being about equal. The nasal tuft is thicker and more feathery and less bristly than in *Pinicola*. The upper tail-coverts are much

longer, the tail less emarginate. Other differences exist in the grooves and ridges of the palate, which need not be here referred to. The middle claw is about equal to hind claw; not longer, as in *Pinicola*.

The genus *Pyrrhula* is an Old World one; extending across from the Atlantic to the Pacific, six or eight species or varieties being recognized by naturalists.

All have the back ash-colored; the wings and tail, with top of head, lustrous black; the under parts ash, generally with vermillion on the cheeks and chin, sometimes extending over the whole under surface; the rump and crissum white: the females similar, but lacking the vermillion. Its introduction into the North American fauna rests on the collecting by the naturalists of the Russian Telegraph Expedition in Alaska of a specimen which — if a full-plumaged male, as stated — differs from all of its congeners in the entire absence of any vermillion tint.



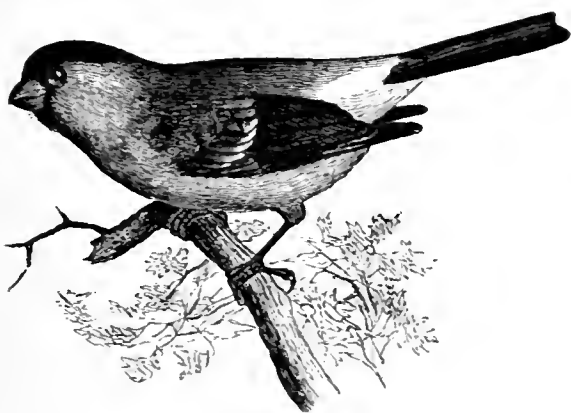
Pyrrhula cassini.

Pyrrhula cassini, BAIRD.

CASSIN'S BULLFINCH.

P. coccinea, var. *cassini*, BAIRD, Trans. Chicago, Ac. Sc. I, 1869, ii, p. 316. — DALL & BANNISTER, Tr. Chic. Ac. I, 1869, 281 (Alaska). *P. cassini*, TRISTRAM, Ibis, 1871, 231. — FINCH, Ornith. N. W. Amerikas, 1872, 54.

SP. CHAR. Description of specimen No. 49,955: Upper parts clear ash-gray, as are the alula, and the lesser and middle secondary and the primary wing-coverts. Under parts



Pyrrhula cassini.

and the sides of head cinnamon-gray; the inside of wings and axillars, anal region, tibia, crissum, and rump white; wings and tail, including upper tail-coverts, the entire top of head (to level of eyes), the base of bill all round, and the chin, lustrous violet-black. Greater wing-coverts black, with a broad band of ashy-white across the ends; outer primaries, externally, with a narrow border of grayish-white near the ends; inner edges suffused with the same. Outer tail-feathers with an elongated patch of white in the

terminal half, along the shaft, but not reaching the tip. Bill black; feet dusky.

Dimensions (prepared specimen): Total length, 6.50; wing, 3.55; tail, 3.25. Exposed portion of first primary, 2.65. Bill: Length from forehead, .44; from nostril, .34. Legs: Tarsus, .75; claw alone, .26; hind toe and claw, .45; claw alone, .25.

No. 49,955, adult male. Nulato, Yukon River, Alaska. January 10, 1867. W. H. DALL (No. 553).

The specimen referred to above is the first record of the occurrence in America of a genus heretofore considered as belonging exclusively to the Old World.

This bird was described in 1869 as a possible variety of *P. coccinea* of Europe. On submitting the typical specimens to Mr. H. B. Tristram of England, it was decided to be a well-marked and distinct species, as explained in the following extract from a letter received from him.

"The coloration of the back is the same as in males of *P. coccinea* and *P. rubicilla*, and differs from the coloration of the ♀ in all three species. In all the ♀ has the back brown instead of slate-colored. Your bird, however, differs from *P. coccinea* in having the under parts of the same color as the ♂ of *P. griseiventris* with a slightly redder hue on the flanks, while *P. coccinea* is a brilliant blazing red. In this your bird is like *P. murina* of the Azores, but that has no white on the rump.

"Nor can it be ♂ juv. of *P. coccinea*, because it has the black head, and the young assumes the black head and red breast simultaneously, or rather the red begins first. It differs from *P. nipalensis* in having a black head and broad white rump, as well as in size."

Dr. O. Finsch, of Bremen, agrees with Mr. Tristram in considering it as specifically distinct, and says that the long white shaft-streak on the outermost tail-feather is to be considered as one of the peculiar characters, and that in general it resembles the female of *P. griseiventris*, LAFR., but differs in having the back beautiful ash-gray.

HABITS. This new species of Bullfinch, having a close resemblance to the *P. coccinea* of Europe, was obtained by Mr. Dall, near Nulato, Alaska, January 10, 1867. An Indian brought it in alive, but badly wounded, having shot it from a small tree near the fort. He had never seen anything like it before, nor had any of the Russians. Captain Everett Smith had, however, met with several flocks of the same species near Ulukuk. This specimen was a male, with black eyes, feet, and bill, and was the only bird of the kind met with by Mr. Dall.

In size it is about equal to *P. coccinea*, which is now quite generally considered to be simply a large race of the common Bullfinch (*P. vulgaris*), and the habits of the American bird are doubtless similar to those of its congeners. The European races inhabit the mountainous regions of Northern and Central Europe, appearing in large flocks in December and January in the more southern regions. In their return in spring to their summer quarters, they move in smaller numbers. They nest in the mountain forests, on trees or bushes. Their nest is usually but a few feet from the ground, is beautifully wrought in a cup shape, made externally of small twigs, blades of grass, and rootlets, lined with coarse hair. They lay five eggs, the ground-color of which shades from a light blue to a bluish or a greenish white, with

brown and violet-colored spots, that usually form a ring around the larger end. Their food is grain and small seeds, and, in spring, the buds of certain trees.

The Bullfinch is a favorite cage-bird, soon reconciled to confinement, and capable of being taught to whistle whole airs of opera music with wonderful exactness and beauty.

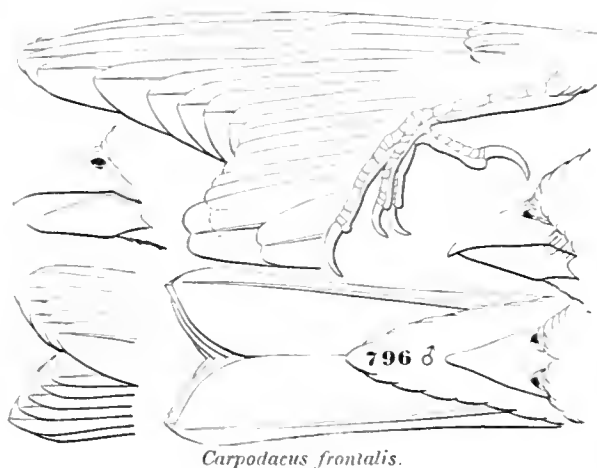
GENUS **CARPODACUS**, KAUP.

Carpodacus, KAUP, "Entw. Europ. Thierw. 1829." (Type, *Loxia erythrina*, PALL.)

Erythrospiza, BONAPARTE, Saggio di una dist. met. 1831.

Hæmorrhous, SWAINSON, Class. Birds, II, 1837, 295. (Type, *Fringilla purpurea*, GMELIN.)

CHAR. Bill short, stout, vaulted; the culmen decurved towards the end; the commissure nearly straight to the slightly decurved end. A slight development of bristly feathers along the sides of the bill, concealing the nostrils. Tarsus shorter than the middle toe; lateral claws reaching to the base of the middle one. Claw of hind toe much curved, smaller than the middle one, and rather less than the digital portion. Wings long and pointed, reaching to the middle of the tail, which is considerably shorter than the wing, and moderately forked. Colors red, or red and brown. *Female* with the red replaced by brown.



The genus *Carpodacus*, including the American Purple Finches, is composed of species the males of which are more or less red in full plumage, while the females are brown-streaked. They are spread over North America, and species also occur in considerable numbers in Northern Europe and Asia.

Species and Varieties.

A. Culmen only slightly curved. Tail and wing feathers edged with reddish in the male.

a. ♂. Crown much brighter purple than the rump or throat. ♀. Without lighter superoral and maxillary stripes, the whole head being pretty uniformly streaked.

1. **C. cassini.** ♂. Crown bright crimson; rest of head, breast, rump, etc., much lighter purple-pink; *lower tail-coverts with a shaft line of dusky.* *Hab.* Mountain regions of the Middle Province, south, through the table-lands and alpine regions of Mexico, to Mirador.

b. ♂. Crown scarcely brighter purple than the rump or throat. ♀. With conspicuous superoral and maxillary stripes.

2. **C. purpureus.** Crown purple; rest of head, breast, rump, etc., nearly similar in tint; *lower tail-coverts without dusky shaft-lines.*

Purple tints of a rosy carmine cast; first quill longer than the fourth. *Hab.* Eastern Province of North America . var. *purpureus.*

Purple tints of a darker purplish-rose cast; first quill shorter than the fourth. *Hab.* Pacific Province of North America var. *californicus*.

B. Culmen much curved. Tail and wing feathers edged with grayish in the male.

3. **C. frontalis.** ♂. A frontal and superciliary band of crimson; a patch of same on the rump, and another on the throat and jugulum; abdomen and crissum streaked with dusky.

♂. Red restricted to the portions mentioned above.

Red of an intense carmine tint, sharply defined, and strictly restricted within the limits indicated. *Hab.* Plateau of Mexico

var. *hæmorrhous*.¹

Red of a lighter carmine, and with a greater or less tendency to escape its boundaries. *Hab.* Middle Province of the United States var. *frontalis*.

♂. Red not restricted, but spread over the crown, tingeing the back and other portions, excepting wings and tail.

Red tint varying from scarlet to wine-red. *Hab.* Pacific Province of United States, including the peninsula of Lower California var. *rhodocolpus*.

Carpodacus cassini, BAIRD.

CASSIN'S PURPLE FINCH.

Carpodacus cassini, BAIRD, Pr. A. N. S. Philad. VII, June, 1854, 119; Birds, N. Am. 1858, 414, pl. xxvii, f. 1. — LORD, Pr. R. A. Inst. iv, 1864, 119 (Br. Col. between Rocky Mts. and Cascades). — KENNERLY, P. R. R. X, pl. xxvii, f. 1. — COOPER, Orn. Cal. I, 155.

SP. CHAR. Larger than *C. purpureus*. Bill, .55 of an inch above. Second and third quills longest; first longer than fourth. **Male.** Above pale grayish-brown, the feathers streaked with darker brown, and with only an occasional gloss of reddish, except on the crown, which is uniform deep crimson, and on the rump. Sides of the head and neck, throat, and upper part of breast with rump, pale rose-color; rest of under parts white, very faintly and sparsely streaked with brown. **Female** without any red, and streaked on the head and under parts with brown. Length, 6.50; wing, 3.60; tail, 2.60.

HAB. Mountainous regions of Middle Province of United States, from Rocky Mountains to Sierra Nevada. British Columbia (LORD). City of Mexico (SCLATER & SALVIS, 1869, 362). Breeds in pine region of Mt. Orizaba.

This species, though somewhat resembling *C. purpureus*, may be easily distinguished from it by the streaked lower tail-coverts (of both sexes), and by the pileum being much more intensely red than any other portion in the male. The female resembles more in markings that of *frontalis*, but has an entirely different shaped bill, and is much larger; the streaks above very conspicuous, instead of nearly obsolete. The side of the head lacks the conspicuous light and dark longitudinal areas observable in *purpureus*.

The young of both sexes resemble the adult female, but the streaks are

¹ *Carpodacus frontalis*, var. *hæmorrhous*, *Carpodacus hæmorrhous*, SCLATER, P. Z. S. 1856, 304. (*Fringilla hæmorrhous*, LACUR. Verz. 1831.)

less sharply defined, and the wing-feathers are broadly edged with light earth-brown.

In autumn and winter, as in all the other species, the red tints are softer and more purplish than in spring and summer.

HABITS. Cassin's Purple Finch is the largest of the American birds of this genus, and is not only conspicuously different from all in size, but also in other respects. It is found between the great Central Plains and the coast range of mountains, being one of the common birds of Colorado, Utah, Nevada, and Eastern California. Dr. Cooper found these birds in large numbers about Lake Tahoe in California. They were all in their brown plumage, and seemed so much like the *C. californicus* in their habits that he mistook them for that species. He noticed in them a very peculiar call-note as they flew, reminding him of that of *Pyrrhuloxia*, and quite different from the other *Carpodaci*. The song of these birds,



Carpodacus frontalis.

as he afterwards heard it, was much louder and finer than that of *C. californicus*, and more original in style. He is not familiar with their other habits, and has never met with them in the Colorado Valley. They have been procured from Fort Thorne, Pueblo Creek, and Albuquerque, New Mexico. Mr. Ridgway met with these birds in the Wahsatch Mountains, June 26, 1869, in Parley's Park, Utah, where he found them breeding. Their nest was in the top of a cottonwood-tree near the cañon stream, about forty feet from the ground. It is a soft homogeneous structure, flattened in shape, and with only a slight depression. It is composed principally of roots and twigs, lined with softer materials of the same, interspersed with moss, cotton, and other soft substances. It is two inches in height with a width of four and a half inches. The cavity is about an inch deep.

In his Report on the birds of Mr. King's survey, Mr. Ridgway states that he found this Linnet in the greatest abundance among the pines of the Sierra Nevada, near Carson City. It was next seen among the cedars and nut-pines of the East Humboldt Mountains, and again in the pine woods and cottonwood-trees along the streams on the Wahsatch Mountains. It breeds in all these localities, and is in its habits essentially, though not exclusively, resident among the pines. March 21, 1868, Mr. Ridgway observed flocks of these birds near Carson City. They were found in every portion of the woods, feeding among the branches of the pine-trees. They were all in full song, the females as well as the males. A week later he again found them common among the isolated pines in the fields at the foot of the Sierras, alighting on the trees in companies. Their notes resemble the song of the *C. purpureus*, but are finer and more musical. They have a great resemblance

to the warblings of the *Vireo flavifrons*, but the passages in its song as much exceed those of the *Vireo* in sweetness as they are surpassed in richness by the warblings of the latter. When one of two females of this species had been killed, the survivor, missing her companion, returned immediately to the tree and hopped from branch to branch, and then alighted on the ground by the side of her dead associate, lamenting her in sweet and plaintive cries.

By the 4th of April the pine-trees about Carson City were alive with these handsome birds, all of whom were in full song. So many were singing simultaneously that the chorus was almost deafening, yet was most exquisitely pleasing.

The nests of this bird were found by Mr. Ridgway in various situations, such as a box-elder bush, the tops of cottonwood and aspen trees, and similar situations. The eggs, four in number, are in size .82 by .63 of an inch, oval in shape, pointed at the smaller end, of a light bluish-green ground, dotted around the larger end with slate, lilac, and a blackish-brown.

Specimens were obtained by Dr. Sartorius, during the breeding-season (June, 1864), in the pine forests of Mt. Orizaba. A careful comparison shows no difference from birds procured in the same month in Nevada.

Carpodacus purpureus, GRAY.

EASTERN PURPLE FINCH.

Fringilla purpurea, Gmelin, Syst. Nat. I, 1788, 923. — Wilson, Am. Orn. I, 1808, 119, pl. vii, f. 4. — Ib. V, 1812, 87, pl. xlii, f. 3. — Aud. Orn. Biog. I, 1831, 24; V, 200, pl. iv. *Hammonchus purpurea*, Swainson, Birds, II, 1837, 295. *Erythropsiza purpurea*, Bp. List, 1838. — Aud. Birds Am. III, 1841, 170, pl. cxcvi. *Carpodacus purpureus*, Gray's Genera, 1844-49. — Bon. & Schlegel, Mon. des Loxiens, 14, tab. xv. — Baird, Birds N. Am. 1858, 412. — Samuels, Birds N. Eng. 285. (*Loria violacea*, Linn. Syst. Nat. 1766, 306, 43. (Very uncertain.) *Purple Finch*, Catesby, Pennant, Lath. *Hemp-Bird*, Bartram.

SE. CHAR. Second quill longest; first shorter than third, considerably longer than the fourth. Body crimson, palest on the rump and breast, darkest across the middle of back and wing-coverts, where the feathers have dusky centres. The red extends below continuously to the lower part of the breast, and in spots to the tibiae. The belly and under tail-coverts white, streaked faintly with brown, except in the very middle. Edges of wings and tail-feathers brownish-red; lesser coverts like the back. Two reddish bands across the wings (over the ends of the middle and greater coverts). Lores dull grayish. Length, 6.25 inches; wing, 3.34; tail, 2.50; bill above, .46. *Female*. Olivaceous-brown above; brighter on the rump. Beneath white; all the feathers everywhere streaked with brown, except on the middle of the belly and under coverts. A superciliary light stripe.

HAB. North America, from Atlantic to the high Central Plains.

HABITS. The Purple Finch is a common species from Georgia to the plains of the Saskatchewan, and as far west as the Great Plains, beyond which it seems to be replaced by another race, or closely allied species. It breeds from about latitude 40° to perhaps 60°, and in most parts between these

parallels is a rather common bird in suitable localities. A few are occasionally found during the winter in Massachusetts, but usually they all pass farther south. In the State of South Carolina they are especially abundant throughout the winter, or from October until April.

Dr. Cones states that the Purple Finch is a very abundant winter resident near Washington, arriving early in October and remaining until May, being eminently gregarious. Stragglers were seen until nearly June, but the majority had departed as the leaves expanded. They were most common in high open woods, and were observed to feed chiefly on tender young buds of trees. They were in full song before they took their departure.

They make their first appearance in regular migrations, in Massachusetts, from the 10th to the 20th of May, and occasionally a few are seen earlier. They are often unwelcome visitors to the fruit-growers, having a great fondness for the blossoms of the peach, cherry, plum, and apple. They will also feed upon other kinds of buds and blossoms. They have a great predilection for evergreen trees, especially the fir, the spruce, and the red cedar, and most generally build their nests in these trees. In summer they feed on seeds, insects, and berries of the honeysuckle and other shrubs.

The Purple Finch, or, as it is generally known in New England, the Linnet, is one of our sweetest, best, and most constant songsters, and is often trapped and sold as caged birds. They soon become accustomed and partially reconciled to their confinement, but sing only during a small part of the year. When one of these birds, confined in a cage, is hung outside the house, in the country, he is sure to draw around him quite a number of his species, and this furnishes the dealer a ready means of capturing them.

This Finch was once regarded as quite rare in the vicinity of Boston, so much so that during a four years' residence in Cambridge, when collections of nests and eggs had many votaries, not a single nest of this species was obtained by any one. Since then, from some cause, probably the increase of gardens, groves of evergreens, and other localities favorable for their preservation and reproduction, these graceful little Finches have become quite abundant in places propitious for their residence. No less than seven pairs of these favorite songsters took up their abode in my grounds at Hingham in a single summer, and two had nests in the same tree, one of which was at least sixty feet from the ground, on the very top of a tall fir. These several pairs, as a general thing, lived together very harmoniously, save only when one would approach too near the favorite station of another, when the latter would begin to bristle up his crest, and give very evident hints that his near presence was not agreeable. The extreme southern end of the ridge-pole of the house had been, for several summers, the favorite post for the patriarch of the flock, from which at morning and at evening he made the neighborhood vocal with his melody. If in his absence any other of these birds ventured to occupy his position, there was always sure to be a disturbance on his return, if it was not instantly vacated. These encounters were frequent,

and always very amusing. Discretion usually took the place of valor on the part of the intruder.

The song of the Purple Finch resembles that of the Canary, and though less varied and powerful, is softer, sweeter, and more touching and pleasing. The notes of this species may be heard from the last of May until late in September, and in the long summer evenings are often continued until after it is quite dark. Their song has all the beauty and pathos of the Warbling Vireo, and greatly resembles it, but is more powerful and full in tone. It is a very interesting sight to watch one of these little performers in the midst of his song. He appears perfectly absorbed in his work, his form dilates, his crest is erected, his throat expands, and he seems to be utterly unconscious of all around him. But let an intruder of his own race appear within a few feet of the singer, and the song instantly ceases, and in a violent fit of indignation he chases him away.

The flight of the Purple Finch is said by Mr. Audubon to resemble that of the Green Finch of Europe. They fly in compact flocks, with an undulating motion, alighting all at once, and then instantly, as if suddenly alarmed, take again to flight only to return to the same tree. They then immediately make each his separate way to the ends of the branches, and commence eating the buds. The food they take to their young is juicy berries and the softer portions of the young cones of the fir and spruce.

They nest generally in firs, spruces, or cedar-trees, though occasionally on the upper branches of a high apple-tree. Their nests are usually placed upon a branch, rather than interlaced between its forked twigs. I have known them not more than five feet from the ground, and at other times on the highest point of a lofty fir-tree. The nests are, for the most part, somewhat flat and shallow structures, not more than two and a half inches in height, and about three and a half in breadth. The walls of the nest average less than an inch, and the cavity corresponds to its general shape and form. The framework of the nest is usually made of small denuded vegetable fibres, stems of grasses, strips of bark, and woody fragments. The upper rim of the nest is often a curious intertwining of dry herbaceous stems, the ends of which project above the nest itself in the manner of a low palisade. The inner nest is made up of minute vegetable fibres, closely interwoven. There is usually no other lining than this. At other times these nests are largely made up of small dark-colored rootlets of wooded plants, lined with finer materials of the same, occasionally mingled with the down of birds and the fur of small animals.

The eggs of the Purple Finch vary greatly in size, and somewhat in shape. Generally they are of an oblong oval, pointed considerably at one end. Their length varies from .92 to .81 of an inch, and their breadth from .70 to .60. Their color is a pale shade of emerald-green, spotted with dark brown, almost black, chiefly about the larger end. The ground-color is much brighter when the eggs are fresh, and soon fades upon exposure to light, and even when kept in a close drawer.

Carpodacus purpureus, var. californicus, BAIRD.**THE CALIFORNIA PURPLE FINCH.**

Carpodacus californicus, BAIRD, Birds N. Am. 1858, 413, pl. lxxii, f. 23. — COOPER & SUCKLEY, 196. — COOPER, Orn. Cal. I, 154.

SP. CHAR. Similar to *purpureus*. Third quill longest; first shorter than the fourth. Purple of head and rump much darker than in *C. purpureus*; the head with a broad supra-orbital lateral band of lighter purple. Length 6.20; wing, 3.20; tail, 2.60.

HAB. Pacific Province of United States.

The female of the western type differs from that of the eastern in being more olivaceous above, and in having the streaks below rather larger, and not so well defined. There appears to be a difference in the marking of the wings. In eastern *C. purpureus* there is usually a well-marked whitish band across the ends of the middle coverts, while the greater coverts, though margined externally by paler, have a still lighter bar across the posterior extremity, which is not seen in the western bird.

HABITS. The Californian Purple Finch is found throughout the Pacific coast, from the Straits of Fuca to California, as far south as Monterey. Dr. Cooper states that this species is rather a northern bird, being common at the Columbia River, and even farther north, while in California it has not been found south of Monterey on the coast, and Fort Tejon in the Sierra Nevada. In summer they frequent the mountain forests, especially those in part composed of *Conifera*. In winter they descend to the valleys, where they are found associating with the more common and familiar *C. frontalis*. He met with them in May on the summits of the coast range toward Santa Cruz, but they were not very numerous. They then had nests, though he did not succeed in finding them.

The song of the California Linnet is quite loud and varied, often resembling that of other birds, especially *Vireos* and *Dendroica*, for which Dr. Cooper has often mistaken it. Their food consists of seeds, berries, and the buds of trees. Their nest and eggs are unknown, but probably resemble those of *C. purpureus*.

Carpodacus frontalis, SCLATER.**HOUSE LINNET; CRIMSON-FRONTED FINCH; BURION.**

Fringilla frontalis, SAY, Long's Exped. R. Mts. II, 1824, 40. (For other synonymes see under the different varieties.)

SP. CHAR. Bill short, nearly as deep as broad; culmen much curved, commissure arched; lower mandible nearly as deep as the upper. Tail more than three fourths as long as wing, slightly emarginated. Wing and tail feathers without reddish edges; lower tail-

coverts and abdomen with broad streaks of dusky. General color above, including wings, tail, and upper tail-coverts, brownish-gray, the feathers with lighter edges. Beneath white, each feather with a medial streak of dusky. *Male*. A broad frontal crescent, extending back in a superciliary stripe to the occiput, a patch on the rump (not the upper tail-coverts), and an area covering cheeks, chin, throat, and jugulum red, — bright scarlet in spring, rosy in fall. *Female* without the red, which is replaced by a uniform streaking. *Young* resembling the female, but streaks less sharply defined; those above more distinct. Wing-coverts broadly edged with light earth-brown.

This species inhabits the western regions of North America, from the Rocky Mountains to the Pacific; and Mexico, except, perhaps, the eastern portion. In this range of distribution it occurs in three races, which, taking extreme examples, are well marked, but when a large series is examined are found to grade insensibly into each other.

The above description is general, being modified only by *additional* characters in the several races. The normal plumage is perhaps represented in the central race, — the true *frontalis*, as restricted, — which inhabits the Middle Province of the United States, and is nearly as described above; the red of the male of this style is of a bright scarlet tint, and in nearly all specimens shows a tendency to escape the boundaries above indicated. As we go south into Mexico, we find the red strictly confined within those limits, very sharply defined; and, under the tropical influence, intensified into a very bright carmine tint; this latter is the *C. himmorrhous* of authors. Following the var. *frontalis* westward, we find it gradually changing, the red invading more and more the other portions, until, in specimens from the coast of California and from Cape St. Lucas, it is spread over all portions, except the anal region, wing, and tail, — though always brightest within those outlines which confine it in the two preceding varieties. In extreme examples of the latter race, — the *C. rhodocolpus* of Cabanis, — the red even obliterates the streaks on the abdomen. The spreading of the red is seen in other birds of the Pacific region, this case being exactly paralleled by the *Sphyrapicus ruber*, in its relation to *S. nuchalis* or *S. varius*.

The females and young of the three races are quite difficult to distinguish from each other, the locality being the best means of identifying them.

Carpodacus frontalis, var. *frontalis*, GRAY.

CRIMSON-FRONTED FINCH; BURION.

Fringilla frontalis, SAY, Long's Exp. II, 1824, 46. — (?) *Accip. Orn. Biog.* V, 1839, 230, pl. cccxxiv. *Pyrhala* f. BONAP. *Am. Orn.* I, 1825, 49, pl. vi. *Erethroniza* f. BON. *Lib.* 1835. — *IR. P. Z. S.* 1837, 112. — (?) *Accip. Syn.* 1839, 125. — *IR. Birds Am.* III, 1841, 175, pl. cxviii. — GAMB. *J. A. N. S.* 24 series, I, 1847, 53. *Fringilla (Pyrhala)* f. GAMB. *P. A. N. S.* I, 1843, 262. *Carpodacus* f. GRAY, *Gen.* 1844-49. — McCALL, *P. A. N. S.* V, 1851, 219. — BAIRD, *Birds N. Am.* 1858, 115. *Carpodacus olivaceus*, McCALL, *P. A. N. S.* V, *Junc.* 1851, 220, Santa Fe, N. M. *Carpodacus frontalis*, McCALL, *P. A. N. S.* VII, April, 1852, 61, Santa Fe, N. M.

SP. CHAR. (♂ 58,589, Great Salt Lake City, Utah, June 1, 1869.) Above brownish-gray, faintly glossed with red on the nape and back; wing and tail feathers passing into lighter on their edges, and dorsal feathers with obsolete shaft-streaks of darker. A frontal band, about as wide as the length of the culmen, continuing back in a superciliary stripe to the occiput, throat, jugulum, and a patch on the lower part of the rump (but not on upper tail-coverts) carmine-scarlet. Rest of lower parts white, each feather with a medial streak of brown like the back. Wing, 3.10; tail, 2.60; culmen, .38; tarsus, .65; middle toe, .52.

(♀ 58,590, Salt Lake City, June 21, 1869.) Similar, but red entirely absent, the throat and jugulum being white streaked with brown, and the front, rump, etc., grayish, obsoletely streaked with darker. Wing, 3.00; tail, 2.40.

(Juv. 40,799, Fort Whipple, Arizona, June 5, 1865.) Generally similar to the ad. ♀, but more brownish, and the wing-feathers passing into dull buffy-ochraceous on their edges; streaks beneath narrower and less distinct.

In winter the red is softer and less sharply defined, and usually of a more purplish tint; the markings generally more blended.

HAB. Middle Province of the United States, from Rocky Mountains to the interior valleys of California.

HABITS. This form of the House Finch appears to be a very common bird throughout the interior region of the United States, extending to New Mexico and Arizona on the south and southeast, and probably to Mexico. On the Pacific coast it is replaced by another and closely allied variety.

Dr. Woodhouse states that his attention was first called to this interesting little songster while at Sante Fé. It was there known to the American residents as the "Adobe Finch." By the Mexicans they were called *Buriones*. He found them exceedingly tame, building about the dwellings, churches, and other buildings, in every nook and corner, and even entering the houses to pick up crumbs. They are never disturbed by the inhabitants. He adds that at the first dawn of the morning they commence a very sweet and clear warble, which he was quite unable to do justice to by any verbal description. He has often in the early morning listened with admiration and gratification to the song of this bird, which is deservedly a great favorite. He found it throughout New Mexico, and beyond. He did not distinguish it from the coast variety.

Dr. Coues also found this bird very abundant in Arizona, where it is a permanent resident, but most abundant in spring and fall. He describes it as eminently gregarious. He found it in all situations, but most common in the spring among the groves of willows and poplars, on the buds of which it feeds. He met with this species all the way from the Rio Grande through New Mexico and Arizona to California, and appears to have noted no differences between this form and the coast variety. He also mentions finding, during a few days' stay in the New Mexican village of Los Pinos, near Albuquerque, on the Rio Grande, this pretty little Finch the most common and characteristic of the local birds. It was there breeding indifferently in the court-yards, sheds, under porticos or eaves, and also in the forks of trees in the streets. It had sharp conflicts with the Barn Swallows, whose nests it

often took possession of, and was a lively and most agreeable feature in the dirty towns which it honored with its presence; and its songs were at once sweet, clear, and exquisitely melodious.

Dr. Cooper met with these birds among the barren and rocky hills near the Colorado.

Mr. Ridgway, who found these birds breeding in large numbers at Pyramid Lake, informs me that their nests were usually placed in clefts in rocks, or in a cave. Near Salt Lake City they were also very common, building their nests among the shrubs known as the wild mahogany, on the hills, but never frequenting the higher regions of the mountains.

The eggs of this bird, which are not distinguishable from those of the Pacific coast form, have a delicate pale-blue ground-color, which is very fugitive, and fades even in the drawers of a cabinet. They are sparingly marked, chiefly around the more obtuse end, with spots and lines of black and a dark brown. They are of oval shape, elongate and pointed at one end, and measure .80 of an inch in length by .60 in breadth.

***Carpodacus frontalis*, var. *rhodocolpus*, CABAN.**

CALIFORNIA HOUSE-FINCH; RED-HEADED LINNET; BURION.

Pyrrhula cruentata, LESSON, Rev. Zool. 1839, 101. *Carpodacus rhodocolpus*, CABANIS, Mus. Hein. 1851, 166. — SEIATER, P. Z. S. 1856, 304. *Carpodacus frontalis*, BON. & SCHLEG. Mon. des Lox. 1850, tab. xvi, f. 1. — IB. Consp. 1850, 533. — BAIRD, Birds N. Am. 1858, 415 (in part). — COOPER, Orn. Cal. I, 156. *House Finch*, GRAYSON, Hesperian, II, 1859, 7, plate. *Carpodacus familiaris*, HEERMANN, X, 50 (nest).

SP. CHAR. (♂ 12,973, Cape St. Lucas.) Head, neck, jugulum, breast, upper part of abdomen and sides, and rump, bright carmine-scarlet, dullest on the centre of the crown and auriculars; rest of the upper parts brownish-gray, glossed with red except on the wings, which have the feathers with distinctly lighter edges. Anal region, flanks, and crissum white, the feathers with shaft-streaks of brown. Wing, 3.00; tail, 2.60; culmen, .15; tarsus, .62; middle toe, .50.

Female and *Juv.* similar to var. *frontalis*, but colors darker.

HAB. Coast region of Pacific Province, and peninsula of Lower California.

The male described above represents about the average plumage of this form; an extreme example is No. 26,546, Cape St. Lucas, which is almost entirely of a wine-red color, this covering the whole lower parts, except the anal region, and obliterating the streaks; the wings even are tinged with red. Still, on the head the red (a wine-purple tint) is brightest within those limits to which it is confined in the normal plumage.

HABITS. This variety of the House Finch is a very common bird throughout the Pacific coast, from Oregon to Mexico. Mr. Ridgway states that he found this species the most common and familiar of all the birds of the Sacramento Valley. It is a very common cage-bird, being highly prized for its song, which in power is hardly inferior to that of the Canary, while it far

surpasses it in sweetness. Its beautiful plumage also renders it still more attractive. The peculiarly soft and musical *tweet* of this bird is also very similar to that of the Canary, and is very different from the common note of the Purple Finch. This bird breeds very numerous among the shade-trees in the streets of Sacramento, as well as among the oak groves on the outskirts of that city. The males are very shy, but the females, when their nest is disturbed, keep up a lively chirping in an adjoining tree. The nest is generally situated near the extremity of a horizontal branch of a small oak, usually in a grove, occasionally in an isolated tree. In one instance it made use of an abandoned nest of a Bullock's Oriole, and in another of that of a Cliff Swallow.

Dr. Cooper speaks of this bird as being especially abundant in all the southern portions of California, and also, according to Dr. Newberry, throughout all the valleys northward into Oregon. It is a species that is everywhere peculiar to the valleys, while the others of this genus are equally confined to the wooded mountains. Dr. Cooper also met with this species in the plains near the coast, where there are no plants higher than the wild mustard, on the seeds of which they feed. They also frequent the groves and the open forests on the summits of the coast range, but in small numbers, in company with the *C. californicus*. They at times feed on buds of trees, and seeds of the cottonwood and other plants. It is most abundant among ranches and gardens where, Dr. Cooper states, it does much mischief by destroying seeds and young plants, fruit and buds. For these depredations even its cheerful and constant song is not regarded as an adequate compensation; and unlike the New-Mexicans in their treatment of its kindred race, the California cultivators wage an unrelenting war upon these birds.

At San Diego, Dr. Cooper found them building as early as the 15th of March, and even a little earlier. Both the situation and the materials of their nest vary. He has found them nesting in trees, on logs and rocks, on the top rail of a picket fence, inside a window-shutter, in the holes of walls, under tiles, on the thatch of a roof, in barns and haystacks, and even between the interstices in the sticks of which the nest of a Hawk had been made, and once in the old nest of an Oriole. About dwellings they always seek the protection of man, and seem to be quite unconscious of having deserved or incurred his enmity. The materials of their nests are usually coarse grasses and weeds, with a lining of hair and fine roots. They raise two, sometimes three, broods in a season, and in the autumn assemble in large flocks, but migrate very little, if any, to the south.

Dr. Cooper states that their songs are very different from those of the other species. They are very varied and very lively, and are heard throughout the year. They are easily kept as cage-birds, but soon lose the beauty of their plumage in confinement, their bright purple colors changing to a dirty yellow.

Nuttall did not observe any of this species in Oregon.

The eggs of this bird vary from four to six in number, and are of a pale blue which readily fades into a bluish-white, and are marked with spots and lines of a dark brown or black. They are of an elongate-oval shape, and measure from .82 to .75 of an inch in length, with an average breadth of .60.

GENUS **CHRY SOMITRIS**, BOIE.

Chrysomitris, BOIE, Isis, 1828, 322. (Type, *Fringilla spinus*, LINN.)

Astragalinus, CAB. Mus. Hein. 1851, 159. (Type, *Fringilla tristis*, LINN.)

Hypicanthus, CAB. Mus. Hein. 1851, 161. (Type, *Carduelis spinoides*.)

GEN. CHAR. Bill rather acutely conic, the tip not very sharp; the culmen slightly convex at the tip; the commissure gently curved. Nostrils concealed. Obsolete ridges on the upper mandible. Tarsi shorter than the middle toe; outer toe rather the longer, reaching to the base of the middle one. Claw of hind toe shorter than the digital portion. Wings and tail as in *Ægiotus*.



Chrysomitris tristis.

The colors are generally yellow, with black on the crown, throat, back, wings, and tail, varied sometimes with white.

The females want the bright markings of the male.

This genus differs from *Ægiotus* in a less acute and more curved bill, a much less development of the bristly feathers at the base of the bill, the claw of the hind toe shorter than its digital portion, the claws shorter and less curved and attenuated, and the outer lateral toes not extending beyond the base of the middle claw.

The species exhibit many differences among themselves, especially in the size and shape of the bill, which have been made the basis of generic distinctions. They may be distinguished as follows:—

Species and Varieties.

A. No streaks anywhere on plumage; base of tail-feathers black or white. Sexes dissimilar. (*Chrysomitris*.)

a. No yellow on the wings.

1. **C. tristis**. Inner webs of tail-feathers always whitish terminally (except in *Juv.*). ♂. Forehead and crown, wings and tail, deep black; rest of plumage, including the back, rich lemon-yellow; tail-coverts white. ♀. Body grayish above, dingy whitish beneath, stained with yellow; no black on head; wings and tail duller black. *Juv.* Fulvous-umber above, with markings of reddish-ochraceous on the wings; beneath, dilute-yellow washed with fulvous. *Hab.* Whole of temperate and warm North America.

2. **C. psaltria**. Inner webs of tail-feathers never whitish terminally. ♂. Beneath yellow, including the lower tail-coverts; above black, with or without olive-green on the back. ♀. Without any black, the yellow duller.

Tail with white on inner webs; tertials with large white spots.

- ♂. Auriculars, nape, back, and rump olive-green. *Hab.* Rocky Mountains of United States var. *psaltria*.
 ♂. Auriculars black; nape, back, and rump green clouded with black. *Hab.* Arizona var. *arizonæ*.
 ♂. Auriculars, nape, back, and rump entirely black. *Hab.* Middle America var. *mexicana*.

Tail without any white on inner webs; tertials without white spots.

- ♂. Auriculars, nape, back, and rump wholly black. *Hab.* Panama and New Granada var. *columbiana*.

b. Terminal half of outer webs of wing-coverts and secondaries yellow.

3. *C. lawrencii*. Prevailing color ashy, lighter beneath. ♂. A large patch on the breast, the rump, and most of the outer surface of the wing, yellow; forehead, crown, lores, all round base of bill, chin, wings (beneath the yellow), and tail black. ♀. Lacking the black, and with the yellow only indicated. *Hab.* California and Southwestern Arizona.

B. Whole body and head thickly streaked; bases of tail-feathers yellow. Sexes alike. (*Astragalinus*.)

4. *C. pinus*. Above brownish-gray, beneath white, with conspicuous dusky streaks everywhere; two light bands on the wing; bases of secondaries and primaries yellow. *Hab.* Whole of North America.

Three species of *Chrysomitris*, given by Mr. Audubon, are to be erased from the list: *C. stanleyi*, *C. yarrelli*, and *C. magellanica*. If, as he states, he killed specimens of the latter in Kentucky, they must have belonged to the *C. notata* of Dubus, a Mexican species, not since met with in our limits. The other two were given him as coming from California, — a statement we now know to be incorrect, both belonging to South America.

Chrysomitris tristis, BON.

YELLOW-BIRD; THISTLE-BIRD.

Fringilla tristis, LINN. Syst. Nat. I, 1766, 320. — WILS. Am. Orn. I, 1808, 20, pl. i, f. 2. — AUD. Orn. Biog. I, 1831, 172; V, 510, pl. xxxiii. *Carduelis tristis*, BON. Obs. Wils. 1825, No. 96. — AUD. Birds Am. II, 1841, 129, pl. clxxxi. — MAX. Cab. Journ. vi, 1858, 281. *Chrysomitris tristis*, BON. List, 1838. — NEWBERRY, Zool. Cal. & Or. Route; Rep. P. R. R. Surv. VII, iv, 1857, 87. — BAIRD, Birds N. Am. 1858, 421. — COOPER & SUCKLEY, 197. — COOPER, Orn. Cal. I, 167. *Astragalinus tristis*, CABANIS, Mus. Hein. 1851, 159 (type). *Carduelis americana*, (EDWARDS,) SW. & RICH. F. B. A. II, 1831, 268. *Golden Finch*, PENNANT. *American Goldfinch*, EDWARDS. *Chardonneret jaune*; *Chardonneret du Canada*; *Tarin de la Nouvelle France*, BUFFON. — IB. Pl. enl., pl. ccii, f. 2, pl. cxcii, f. 1. — SAMUELS, Birds N. Eng. 288.

SP. CHAR. *Male*. Bright gamboge-yellow; crown, wings, and tail black. Lesser wing-coverts, band across the end of greater ones, ends of secondaries and tertiaries, inner margins of tail-feathers, upper and under tail-coverts, and tibia white. Length, 5.25 inches; wing, 3.00. *Female*. Yellowish-gray above; greenish-yellow below. No black on forehead. Wing and tail much as in the male. *Young*. Reddish-olive above; fulvous-

yellow below; two broad bands across coverts, and broad edges to last half of secondaries pale rufous.

HAB. North America generally.

In winter the yellow is replaced by a yellowish-brown; the black of the crown wanting, that of wings and tail browner. The throat is generally yellowish; the under parts ashy-brown, passing behind into white.

There are no observable differences between eastern and western specimens.

HABITS. The common American Goldfinch is found throughout the



Chrysomitris tristis.

greater portion of North America, from the Atlantic to the Pacific. Sir John Richardson met with it in the fur regions, where it is one of the earliest of the summer visitors, and whence it departs early in September. The specimen described by him was taken June 29. At the extreme South it is not uncommon, according to Dresser, around San Antonio, and Dr. Woodhouse found it abundant both in Texas and in the Indian Territory. Dr. Coues did not find it in Arizona, nor does Sumichrast

give it as a bird of Vera Cruz. Dr. Newberry found this Finch quite common throughout his route to the Columbia, this sweet songster, he states, having been a constant source of pleasure in the interior both of California and Oregon, far from the haunts of men, where everything else was new and strange. But Dr. Suckley, though he looked carefully for this species about Puget Sound, in the most appropriate situations, was unable to find any, and did not believe that any existed there. Dr. Cooper states that it is, however, quite abundant on the Columbia and along the coast near its mouth.

The last-named writer states that this species is a constant resident in all the western parts of California, but he met with none on the Colorado. They become rare on the coast at the Columbia, but farther in the interior are found as far north as latitude 49°. They breed as far south as San Diego, but seem to avoid the hot interior valleys, as well as the mountains. Their favorite resorts are where thistles and other composite plants abound, and also groves of willow and cottonwood, upon the seeds of which they feed largely. In winter the seeds of the buttonwood supply their chief subsistence.

The common Goldfinch was seen in abundance by Mr. Ridgway only in the vicinity of Sacramento City, associated with the *Carpodacus frontalis*, and often nesting in the same tree. In the interior this species was rarely seen, and only one specimen was secured in the Truckee Valley in May, and not noticed afterwards. It was, however, found breeding in the Uintah

Mountains, where its nest and eggs were obtained. The nests procured by Mr. Ridgway were all found about June 6, except one, ten days later, showing that these birds are four or five weeks earlier in their breeding on the Pacific than on the Atlantic coast. In the Uintah Mountains they were breeding, as at the East, in July.

The Goldfinch is to a large extent gregarious and nomadic in its habits, and only for a short portion of the year do these birds separate into pairs for the purposes of reproduction. During at least three fourths of the year they associate in small flocks, and wander about in an irregular and uncertain manner in quest of their food. They are resident throughout the year in New England, and also throughout the greater portion of the country, their presence or absence being regulated to a large extent by the abundance, scarcity, or absence of their favorite kinds of food. In the winter, the seeds of the taller weeds are their principal means of subsistence. In the summer, the seeds of the thistle and other plants and weeds are sought out by these interesting and busy gleaners. They are abundant in gardens, and as a general thing do very little harm, and a vast amount of benefit in the destruction of the seeds of troublesome weeds. As, however, they do not always discriminate between seeds that are troublesome and those that are desirable, the Goldfinches are unwelcome visitors to the farmers who seek to raise their own seeds of the lettuce, turnip, and other similar vegetables. They are also very fond of the seeds of the sunflower.

Owing possibly to the scarcity of proper food for their young in the early summer, the Goldfinches are quite late before they mate and raise their single brood. It is usually past the 10th of July before their nests are constructed, and often September before their broods are ready to fly.

The song of the Goldfinch — very different from their usual plaintive cry or call-note, uttered as they are flying or when they are feeding — is very sweet, brilliant, and pleasing; most so, indeed, when given as a solo, with no other of its kindred within hearing. I know of none of our common singers that excel it in either respect. Its notes are higher and more flute-like, and its song is more prolonged than that of the Purple Finch. Where large flocks are found in the spring or early summer, the males often join in a very curious and remarkable concert, in which the voices of the several performers do not always accord. In spite of this frequent want of harmony, these concerts are varied and pleasing, now ringing like the loud voices of the Canary, and now sinking into a low soft warble.

During the warm summer weather the Goldfinch is very fond of bathing, and the sandy shelving margins of brooks are always their favorite places of resort for this purpose. I do not think they ever raise more than a single brood in a season in New England, and are in this somewhat irregular, depositing their eggs from July 10 to September, as it may happen.

They usually select a small upright tree, such as a young elm, apple, or pear, or a tall shrub, for their nest, which they rarely place higher than ten

feet from the ground. Than the nest of our Goldfinch we have no more beautiful specimen either of the basket in shape or the felted in structure. Symmetrical in form, delicately and beautifully woven, and ingeniously and firmly fastened around the forked twigs with which it is interlaced, it is an exquisite example of architectural beauty and finish. A beautiful specimen from Wisconsin may be taken as typical. It measures three inches in diameter and two in height. The cavity is one and a half inches wide at the rim, and the depth is the same. The base of this nest is a commingling of soft vegetable wool, very fine stems of dried grasses, and fine strips of bark, all being in very fine shreds. The sides, rim, and general exterior of the nest is made up, to a large extent, of fine slender vegetable fibres, interwrought with white and maroon-colored vegetable wool. These materials are closely and densely felted together. The inner nest is softly and thoroughly lined with a softer felting made of the plumose appendages or pappus of the seeds of composite plants.

The eggs, usually five, rarely six in number, are of a uniform bluish-white, sharply pointed at one and rounded at the other end. They measure from .65 to .67 of an inch in length and from .50 to .55 in breadth. Dr. Cooper gives their measurement as .60 by .50; but of the contents of seven nests before me not an egg is less than .65 in length, and but one so small as .50 in breadth.

A nest of this Finch, built in a young elm-tree in Hingham, eight feet from the ground, was begun July 27, finished and the first egg laid August 1. By the 4th five eggs had been deposited, and on the 16th they had all been hatched.

Chrysomitris psaltria, var. *psaltria*, BONAP.

ROCKY MOUNTAIN GOLDFINCH; ARKANSAS GOLDFINCH.

Fringilla psaltria, SAY, Long's Exped. R. Mts. II, 1823, 40. — AUD. Orn. Biog. V, 1839, 85, pl. ccxciv. — *Fringilla (Carduelis) psaltria*, BON. Am. Orn. I, 1825, 54, pl. vi, f. 3. — *Carduelis psaltria*, AUD. Syn. 1839, 117. — *Ib.* Birds Am. III, 1841, 134, pl. clxxxiii. — *Chrysomitris psaltria*, BR. List, 1838. — *Ib.* Consp. 1850, 516. — GAMBEL, Jour. A. N. S. 2d series I, 1847, 52 (female). — BAIRD, Birds N. Am. 1858, 422. — COOPER, Orn. Cal. I, 168.

SP. CHAR. *Male*. Upper parts and sides of head and neck olive-green. Hood, but not sides of head below eyes, lores (or auriculars?), upper tail-coverts, wings, and tail black. Beneath bright yellow. A band across the tips of the greater coverts, the ends of nearly all the quills, the outer edges of the tertiaries, the extreme bases of all the primaries except the outer two, and a long rectangular patch on the inner webs of the outer three tail-feathers near the middle white. *Female* with the upper parts generally, and the sides olive-green; the wings and tail brown, their white marks as in the male. Length, 4.25; wing, 2.40; tail, 1.85. *Young* like the female, but wing-bands more fulvous.

HAB. Southern Rocky Mountains to the coast of California; north to Salt Lake City (June 19, RIDGWAY), and Siskiyou Co., Cal. (Verrill); south to Sonora (Ainspe, Feb. 26; E. S. WARDFIELD).

With quite a small series of specimens, a perfect transition can be shown from the typical *C. psaltria*, as above described, to the *C. columbianus*, the opposite extreme (see table, page 471). The former is the most northern, the latter the most southern form; *arizonæ* and *mexicana*, intermediate in habitat, are also as strikingly so in plumage. The difference is in the *quantity* of the black, this color predominating over the olive of the back and the white of wings and tail, in proportion as we go southward. There cannot, upon the whole, be any doubt that they are all specifically the same. The females can scarcely be distinguished.

HABITS. The Arkansas Finch was first discovered in Long's expedition to the Rocky Mountains, and described by Say in 1823. It has since been met with in New Mexico and in various parts of California. Dr. Cooper did not find this species in the Colorado Valley, although Dr. Kennerly met with it along Williams Fork, in New Mexico. Dr. Woodhouse did not see it in his route to the Zuñi River, either in New Mexico or the Indian Territory.

Dr. Kennerly met with these birds in the month of February. He found them very abundant all along the banks of the Bill Williams Fork. They were feeding on the young buds of the cottonwood trees. At that season they were in small flocks, and the only note he heard from them was a short chirp, as they hopped from twig to twig, or flew from one tree to another.

Dr. Heermann states that he found these Finches abundant in the northern mining regions of California, frequenting and feeding in the same localities with the *C. lawrencii*, and often associated with the Pine Finch. He adds that, while thus associated, he shot a large number of both species. They seemed to be employed, at the time, in picking out the fine gravel mixed in the mud used as mortar for a chimney, flying away at each discharge of the gun, but returning, in a few minutes, to the same place.

Mr. Audubon regarded this species as accidental in Louisiana, having procured individuals a few miles from Bayou Sara.

The Arkansas Goldfinch was found by Mr. Ridgway among the Wahsatch Mountains, his attention being at once drawn to it by its curious notes. He first met with it in "City-Creek Cañon," near Salt Lake City, where individuals of it were frequently found mixed in with flocks of *C. pinus*. The note of this bird is remarkable for its power and very sad tone. The ordinary note is a plaintive, mellow, whistling call, impossible to describe, and so inflected as to produce a very mournful effect. When the bird takes to flight, it is changed to a simple *cheer*, similar to the anxious notes of the male *Agelaius phœniceus*, uttered when its nest is disturbed. This species was quite rare, not being so common as either *C. pinus* or *C. tristis*. Its nest was found in Parley's Park, Wahsatch Mountains, June 22, in the top of a willow-bush near a stream.

At San Diego, and along the whole coast border of California, Dr. Cooper thinks that this Finch is rather rare. In the interior valleys they seem to be quite common. They also breed in small numbers in the Coast Range,

near Santa Cruz. He states that their habits are very similar to those of the *C. tristis*, though they feed more on the ground, and more upon weeds than on trees, and are even more gregarious, remaining associated in flocks up to the first of June. Their song greatly resembles that of the common Goldfinch, but is much fainter.

Dr. Cooper never met with their nest, nor has he received any description of it. Mr. Xantus found one, containing four eggs, on the branch of an *Obione*, about ten feet from the ground. This was at Fort Tejon, the first of May. Dr. Canfield has also found their nests, in considerable numbers, near Monterey. They are built in the forks of trees, in the same manner with the *tristis*, are structures of remarkable beauty, and evince great skill in the architects. They contain usually four or five eggs. Except in size, their eggs greatly resemble those of the *C. tristis*, being of a uniform greenish-white, unspotted, of a rounded-oval shape, sharply pointed at one end. They measure .60 by .50 of an inch.

Chrysomitris psaltria, var. *arizonæ*, COUES.

ARIZONA GOLDFINCH.

Chrysomitris mexicana, var. *arizonæ*, COUES, P. A. N. S. 1866. — COOPER, Orn. Cal. I, 170.

SP. CHAR. (♂ 37,092, Fort Wingate, Arizona, June 28, 1861.) Above, including auriculars, glossy black, with a faint bluish reflection; nape, back, and rump much mixed with olive-green, this rather predominating; larger coverts broadly tipped with grayish-white; tertials, with almost the entire exposed portion of the outer webs, white; a patch on base of primaries, and the inner webs of the tail-feathers, except the ends, white. Beneath entirely lemon-yellow. Wing, 2.50; tail, 1.70; culmen, .35; tarsus, .50.

HAB. Southern boundary of Arizona and New Mexico, extending southward into Mexico, and gradually changing into *mexicana*, and northward into *psaltria*.

The specimen described above is from a series collected in Arizona by Dr. Coues: these examples vary in the relative amount of black and olive on the back, some having one, and others the other color predominating; the type selected is one which represents about the average plumage of this species from Arizona.

HABITS. Dr. Coues found these birds abundant summer residents of Arizona, where they are said to arrive the last of April and to remain until the middle of September. In August the males are stated to assume the dull plumage of the females. In autumn they become decidedly gregarious, and feed almost exclusively upon buds and seeds. He thinks they are not so numerous in the southern portions of the Territory. In a letter received from him he remarks: —

“This bird was found to be common in New Mexico near Fort Wingate, at the eastern base of the main chain of mountains. I first observed it on the 28th of June, when I found quite a number together, and secured several

specimens. They were in small troops on a rugged hillside covered with a sparse growth of junipers and stunted pines, feeding in company with the *Poospiza bilineata*. Judging from their actions, and from the fact that none but males were taken, I presume they were breeding in the vicinity. I found some difficulty in securing specimens, partly owing to the broken nature of the locality, and partly to the birds' timidity in the unaccustomed presence of man. Those that were shot were all found to have the esophagus as well as the gizzard crammed with seeds. They constantly uttered a plaintive lisping whistle as they gathered food, or as they flew from one tree to another, but their song did not strike my ear as precisely the same as that of the Goldfinch. These specimens were all in what I take to be perfect plumage, although the back was mixed with olive and black in nearly equal proportions, and the black of the pileum did not reach below the eyes to cut off the yellow under eyelid from the other yellowish parts of the head; thus closely resembling true *psaltria*.

"Upon my arrival at Fort Whipple in July, I found birds of this type abundant, and took a good many during the two following months, when they disappeared, and I saw none until about the first of May. A small ravine close by the fort, choked with a rank growth of weeds, was a favorite resort; there the birds could be found at nearly all times in season, in large troops, feeding in company with Chipping Sparrows, and the *Spizella atrigularis*. They were very tame during the latter part of the summer, would only rise when very closely approached, when they flew in a hesitating manner a short distance, and then pitched down again among the weeds to resume their busy search for food. In their undulating flight they utter their peculiar note, generally with each impulse of the wings, and keep up a continual chirping when feeding; but I did not hear their true song at this season. Some of the specimens taken were very young birds, and the species unquestionably breeds here, although I never succeeded in finding a nest.

"I should not omit to add, that whilst at Santa Fé, New Mexico, I saw caged birds that were thriving well, and apparently reconciled to confinement."

A nest of this bird, obtained near Camp Grant, Arizona, by Dr. Palmer, is a flat and shallow structure, having a diameter of three inches, and a height of one and a quarter. The cavity is only a slight depression. This nest is made of a felting of various materials, chiefly the cotton-like down of the cottonwood-tree and other soft vegetable matter, fine stems of grasses, fragments of mosses, and various other similar materials, lined with finer materials of the same. Except in their slightly smaller size, the eggs are not distinguishably different from the preceding.

Chrysomitris psaltria, var. mexicana, BONAP.**BLACK GOLDFINCH; MEXICAN GOLDFINCH.**

Carduelis mexicanus, SWAINS. Syn. Birds Mex. Phil. Mag. 1827, 435. — WAGLER, Isis, 1831, 525. *Chrysomitris mexicanus*, Br. Consp. Av. 1850, 516 (quotes AUD. tab. 427). — BAIRD, Birds N. Am. 1858, 423, pl. liv, f. 1. *Astragalinus mexicanus*, CAB. Mus. Hein. 1851, 159. — Ib. Journ. für Orn. 1861, 7 (with synonymy). — COUES, P. A. N. S. 1866, 82. *Fringilla melanorantha* (LICHT.), WAGLER, Isis, 1831, 525. ? *Fringilla catotol*, GM. Syst. Nat. 1, 1788, 914. *Fringilla texensis*, GIRAUD, 16 Sp. Birds Tex. 1841, pl. v. f. 1 (gives white belly). — COOPER, Orn. Cal. 1, 169.

SP. CHAR. Upper parts continuously and entirely black; the feathers of the rump white subterminally, and showing this through the black; a few of the feathers with greenish-yellow between the white and the black; a few, perhaps, without black tips. The bases of the third to seventh primaries, and the ends of the tertiaries externally white. The tail is black, except the outer three feathers, in which the outer webs and tips only are this color; the rest white. Inside of wing black. Under parts of body pale yellow. Female with the black of the head and body replaced by olive-green. Length, 4.12 inches; wing, 2.25; tail, 2.00.

HAB. Mexican side of the valley of the Rio Grande, southward; Oaxaca, June (SCL. 1858, 302); Cordova (SCL. 1856, 303); Guatemala (SCL. Ibis 1, 19); Costa Rica (CAB. J. 1861, 7); Panama (LAWR. N. Y. Lyc. 1861, 331; winter).

HABITS. The Mexican Goldfinch is distributed from the western side of the Rio Grande, through Mexico and Central America, to Panama. Sumichrast mentions it as found throughout the State of Vera Cruz, but most abundant in the temperate region. It breeds in the vicinity of Orizaba. It was taken in Central America, by Mr. Skinner, and has been reported from Costa Rica, and from Panama in the winter. Of its distinctive peculiarities we have no information, but they probably do not differ from those of the other forms of *C. psaltria*.

Chrysomitris lawrencii, BONAP.**LAWRENCE'S GOLDFINCH.**

Carduelis lawrencii, CASSIN, Pr. A. N. Sc. V, Oct. 1850, 105, pl. v (California). *Chrysomitris lawrencii*, BON. Comptes Rendus, Dec. 1853, 913. — BAIRD, Birds N. Am. 1858, 424. — HERRM. X, 8, 50 (nest). — ELLIOT, Illust. Am. B. 1, pl. viii. — COOPER, Orn. Cal. 1, 171.

SP. CHAR. Male. Hood, sides of head anterior to the middle of the eye, chin, and upper part of throat, black. Sides of head, neck, and body, upper part of neck and the back, and upper tail-coverts, ash-color. Rump and lesser wing-coverts yellowish-green. Throat below the black, breast, and outer edges of all the quills (except the first primary, and passing into white behind), bright greenish-yellow. Wings black. Tail-feathers black, with a white square patch on the inner web, near the end; outer edges grayish; quills black. Female similar, with the black of the head replaced by ash. Length, about 4.70; wing, 2.75; tail, 2.30. Young like the female, but wing-bands pale fulvous, instead of yellow.

HAB. Coast of California; Fort Whipple, Arizona (COUES, P. A. N. S. 1866, 83).

HABITS. This species, now known to be so common throughout the greater portion of California, was first described by Mr. Cassin in 1850. Dr. Heermann afterwards found them very abundant throughout the northern mining regions of California, frequenting the hillsides covered with brush, the seeds and buds of which they eat with great avidity. Later in the season he found them at San Diego, in quest of grass-seeds on the level plains. They were in large flocks, and so closely packed that he shot thirteen at one discharge. Their nests, he states, are built in the fork of a bush or stunted oak, and are composed of fine grasses, lined with hair and feathers. They contain four or five pure white eggs.

Mr. Ridgway only met with this Goldfinch near the foot of the western slope of the Sierra Nevada.

Dr. Cooper met with a few of this species at Fort Mohave, on the Colorado, but found them more numerous near the coast as far north as San Francisco, at least, and also in the more northern mining regions. He has seen them about San Francisco in December, and has no doubt that they remain all the winter throughout the lower country. They seem to avoid the mountainous regions, and have not been met with in Oregon.

Their habits and their song are, in general respects, similar to those of the Goldfinch (*C. tristis*), but their voice is much weaker, and is higher in its pitch. Their nests, Dr. Cooper thinks, are placed, in preference, on the live-oaks; at least, he has never met with them in any other situation. They are built very much in the style of those of the Goldfinch, but are much smaller, the cavity measuring only an inch in depth and one and a half in breadth. The eggs he describes as four or five in number, pure white, and measuring .80 by .46 of an inch. He adds that they sometimes feed on the ground, on grass-seeds, as well as on buds and seeds of various weeds and trees. They were regarded by him as more of a sylvan species than the Goldfinch, and not so fond of willows and other trees growing along streams and in wet places. In the Colorado Valley they feed on the seeds of the artemisia. He did not notice any there after the middle of April. Eggs, in my own cabinet, from Monterey, identified by Dr. Canfield, are of a uniform greenish-white, exactly similar to those of *C. psaltria* and *tristis*, and measure only .58 by .45 of an inch, or less in length by .22 than as given by Dr. Cooper.

Three nests of this species obtained at Monterey, Cal., by Dr. Canfield, all exhibit more or less variations as to material and style of make. They are all more or less felted, and beautifully wrought, fully equal in artistic skill to the nests of the Goldfinch. They are about one and a half inches in height and three in diameter, and the cavity is an inch in depth and one and three quarters in diameter. The walls of these nests are soft, warm, and thick, composed of wool, both vegetable and animal, fine stems of grasses, down, feathers, and other materials, all closely matted together, and lined with the long hair of the larger animals. One of these nests is made up entirely of the finer grasses, strongly matted together.

Chrysomitris pinus, BONAP.**PINE GOLDFINCH.**

Fringilla pinus, WILSON, Am. Orn. II, 1810, 133, pl. xvii, f. 1. — AUD. Orn. Biog. II, 1834, 455; V, 509, pl. clxxx. *Fringilla (Carduelis) pinus*, BON. Obs. Wils. 1823, No. 103. *Linaria pinus*, AUD. Synopsis, 1839, 115. — IB. Birds Am. III, 1841, 125, pl. clxxx. *Chrysomitris pinus*, BONAP. Consp. 1850, 515. — BAIRD, Birds N. Am. 1858, 425. — COOPER & SUCKLEY, 197. — COOPER, Orn. Cal. I, 172. — SAMUELS, 290. *Chrysomitris macroptera*, DUBUS, Esq. Orn. tab. 23 (Mexico). — BR. Conspectus, 1850, 515.

SP. CHAR. Tail deeply forked. Above brownish-olive. Beneath whitish, every feather streaked distinctly with dusky. Concealed bases of tail-feathers and quills, together with their inner edges, sulphur-yellow. Outer edges of quills and tail-feathers yellowish-green. Two brownish-white bands on the wing. Length, 4.75; wing, 3.00; tail, 2.20. Sexes alike. *Young* similar, but the white below tinged with yellow, the upper parts with reddish-brown, and there are two pale ochraceous bands on the wing.



HAB. North America from Atlantic to Pacific; Vera Cruz, plateau and alpine region (SMITHSONIAN, I, 550).

Specimens from all parts of North America appear to be the same, but there is a great deal of variation among individuals. No. 10,225 ♂, Fort Tejon, California, and 51,636, Colorado Territory, are almost entirely white beneath, the streaks being hardly observable. 32,765, Mexico, and 9,524, Washington Territory, are unstreaked medially. No. 11,096, Fort Bridger, has the streaks on the sides unusually broad, and very black.

In autumn and winter a reddish-brown tinge overspreads the upper parts.

HABITS. Though classed with the Goldfinches of this country, the Pine Finch, in many respects more nearly resembles, in its habits and nidification, the *Carpodacus*. It is found throughout the United States, from the Atlantic to the Pacific. In the winter it extends its irregular migrations into the Central States, as far as Northern California on the Pacific, and Southern Pennsylvania on the Atlantic. It breeds throughout the British Provinces, Northern Maine, New Hampshire, Vermont, New York, Michigan, and thence to Washington Territory, in all the evergreen forests.

At Calais, Me., it is resident throughout the year, and breeds there, but is much more common in the winter than in the summer. In Western Maine, Professor Verrill observed it very common, both in the spring and in the fall, but never found it breeding. He found it very abundant about the Umbagog lakes in July, where it was evidently breeding. It breeds also abundantly among the White Mountains.

Mr. Ridgway first saw the Pine Finch on the East Humboldt Mountains,

where, through July and August, it was quite common, and where undoubtedly it breeds, as a young bird unable to fly was obtained. On the Wahsatch Mountains it was a very abundant species, inhabiting the pines as well as the groves of aspens in the alpine regions. It is gregarious at all times, flying in roving, screeching flocks. The notes it utters on all occasions resemble a very peculiar pronunciation of *see-er*, given in a very sharp tone. When the flock suddenly takes to flight, this is changed to a more rattling outcry. A nest, containing no eggs, was found in an aspen-tree; and another, containing one egg, similar to those described elsewhere, was found in a fir-tree (*Abies*) situated near the extremity of a horizontal branch about twenty feet from the ground.

The Pine Finch is also a very common and resident bird in the plateau of Mexico and in the alpine regions of the State of Vera Cruz. Its common name there is *Dominiguito montero*. In the alpine regions Sumichrast states that it is found to the height of six thousand five hundred feet, and does not, to his knowledge, descend below three thousand feet. It most especially frequents the plateau.

Captain Blakiston met with this species on the plains of the Saskatchewan, near the Rocky Mountains, August 6, 1858.

In the eastern portion of Massachusetts it is somewhat irregular in its movements and appearance, which are supposed to be affected by the abundance or scarcity of its food elsewhere. Here it feeds chiefly on seeds of grasses and weeds, probably only after the seeds of the hemlock and other forest trees have failed it. They are usually most abundant late in the season and after heavy falls of snow farther north have diminished their means of subsistence. Mr. Maynard found it very numerous in the winter of 1859-60, remaining until quite late in the season, and again in the winter of 1868-69, remaining until the last week in May. In Western Massachusetts, according to Mr. Allen, it is a regular winter visitant, but never abundant. It arrives early in October, and may be seen in small flocks from that time to the third week in May. It sometimes frequents the apple-orchards, where it feeds on the *Aphides*. According to Dr. Coues, this species occasionally strays as far to the south as the Carolinas, but it is not common there.

Wilson observed these birds near Philadelphia, where they were feeding on the seeds of the alder. Later in the season they collected in larger flocks and took up their abode among the pine woods. In one particular locality, he states, a flock of two or three hundred of these birds regularly wintered, for many years in succession, where noble avenues of pines furnished them with abundant food throughout the season. Early in March they all disappeared. While there, they were so tame as to allow a person to approach within a few yards. They fluttered among the branches, frequently hanging from the cones, at the same time uttering notes closely resembling those of the Goldfinch.

In severe winters Mr. Audubon has met with the Pine Finch as far south as Henderson, Ky., and Charleston, S. C., but such visits were always brief. In August, 1832, he met with flocks of these birds in Labrador. They were in company with the Crossbill, and were feeding on the seeds of the fir-trees, and also on those of the thistle. When at the Magdalen Islands he frequently saw flocks moving from various directions. At Bras d'Or, towards the end of July, they were in great numbers, and the old birds were accompanied by their young. They frequented thickets of willows and elders in the vicinity of water, and were very fearless and gentle. According to his account they sing while on the wing, and their notes are sweet, varied, clear, and mellow, and, while somewhat resembling the song of the *C. tristis*, are perfectly distinct from it. Its flight is exactly similar, both gliding through the air in graceful and deep curves.

In Washington Territory Dr. Cooper found this Finch an abundant and constant resident, migrating to the coast in winter, where it feeds on the seeds of the alder. In summer they were gregarious, even when occupied with their nests and young. He has never met with any in California, not even in the Sierra Nevada, though they have been found by others along its whole western slope, as far south as Fort Tejon. They feed on the seeds of both coniferous and deciduous trees.

Early in May, 1859, a pair of these birds built their nest in the garden of Professor Benjamin Peirce, in Cambridge, Mass., near the colleges. It was found on the 9th by Mr. Frederick Ware, and already contained its full complement of four eggs, partly incubated. This nest was three inches in height and four in diameter. The depth of the cavity, as well as its diameter at the rim, was two inches. The base of this nest was a mass of loose materials, and the lower portions of the sides were hardly different. The upper and the inner portions of this fabric were much more compactly and neatly woven, or rather felted together. The outer layers consisted of small twigs of the *Thuja*, dried stems and ends of pine twigs, grasses, sedges, stalks of small vegetables, fine roots, bits of wool, and coarse hair. The whole was very closely lined with fine dry roots of herbaceous plants and the hair of small quadrupeds.

The eggs are of an oblong-oval shape, of a light green ground-color, spotted, chiefly at the larger end, with markings of a light rusty-brown. They measure .71 by .50 of an inch. They have a marked resemblance to the eggs of the *Linaria*, but the ground-color is of a slightly lighter shade.

A nest of this species, found May 15, 1868, at Brunich, Canada, was composed almost entirely of pine twigs interlaced in a very neat and artistic manner. Its diameter was three and a half inches, and its height two inches. It was lined with hair. The cavity was one and a half inches deep and two inches wide.

GENUS **LOXIA**, LINNÆUS.*Loxia*, LINNÆUS, Syst. Nat. ed. 10, 758. (Type, *Loxia curvirostra*, L.)*Curvirostra*, "SCOPOLI, 1777." (Type, *L. curvirostra*.)

GEN. CHAR. Mandibles much elongated, compressed and attenuated; greatly curved or falcate, the points crossing or overlapping to a greater or less degree. Tarsi very short; claws all very long, the lateral extending beyond the middle of the central; hind claw longer than its digit. Wings very long and pointed, reaching beyond the middle of the narrow, forked tail.

Colors reddish in the male.

*Loxia americana.*

The elongated, compressed, falcate-curved, and overlapping mandibles readily characterize this genus among birds. This feature, however, only belongs to grown specimens, the young having a straight bill, as in other Finches.

The United States species of *Loxia* are readily distinguished by the presence of white bands on the wing in *leucoptera* and their absence in *americana*. Neither form, however, is to be considered as specifically distinct from their European allies. The differences are as follows:—

Species and Varieties.

L. curvirostra. Wings dusky, without white bands.

1. Bill from forehead, .74; wing, 3.90; tail, 2.40. Lower mandible much weaker than the upper. *Hab.* Europe var. *curvirostra*.¹
2. Bill from forehead, .80 or more; wing, 4.00; tail, 2.50. Lower mandible as strong as the upper. *Hab.* Rocky Mountains of United States, and mountainous regions of Mexico var. *mexicana*.
3. Bill from forehead, .60 or less; wing, 3.30; tail, 2.20. *Hab.* North America generally var. *americana*.

L. leucoptera. Wings deep black, with two broad white bands.

1. Body and head pomegranate-red; black of scapulars nearly meeting across lower back. *Hab.* Northern North America; "Himalayas"; "Japan" var. *leucoptera*.
2. Body, etc., cinnabar-red; back nearly wholly red. *Hab.* Europe. var. *bifasciata*.²

¹ *Loxia curvirostra*, LINN., Syst. Nat. 299.

² *Loxia bifasciata*, DE SELVS-LONGCHAMPS, Faune Belge, 76. BONAP. & SCHLEGEL, Mon. des Loxiens, 7.

Loxia curvirostra var. *americana*, BAIRD.

RED CROSSBILL.

Curvirostra americana, WILS. Am. Orn. IV, 1811, 44, pl. xxxi, f. 1, 2. — BAIRD, Birds N. Am. 1858, 426. — COOPER & SUCKLEY, 198. — DALL & BANNISTER, Tr. Ch. Ac. I, 1869, 281 (Alaska). — COOPER, Orn. Cal. I, 148. — SAMUELS, 291. *Loxia americana*, BON. List, 1838. — BON. & SCHLEGEL, Mon. Loxiens, 5, tab. vi. — NEWBERRY, Zool. California and Oregon Route, P. R. R. Rep. VI, IV, 1857, 87. — BON. & SCHLEGEL, Mon. Lox. 5, pl. vi. *Loxia curvirostra*, FORSTER, Phil. Trans. LXII, 1772, No. 23. AVD. Biog. II, 1834, 559; V, 511, pl. excvii. — IB. Birds Am. III, 1841, 186, pl. cc. "*Loxia pusilla*, ILLIGER" (Bp.). "*Loxia fusca*, VIEILLLOT" (Bp.).

SP. CHAR. *Old male* dull red (the shade differing in the specimen, sometimes brick-red, sometimes vermilion, etc.); darkest across the back; wings and tail dark blackish-

*Loxia americana.*

Young male yellowish. *Female* dull greenish-olive above, each feather with a dusky centre; rump and crown bright greenish-yellow. Beneath grayish; tinged, especially on the sides of the body, with greenish-yellow. *Young* olive above; whitish beneath, conspicuously streaked above and below with blackish. Male about 6 inches; wing, 3.30; tail, 2.25.

HAB. Northern America generally, coming southward in winter. Resident in the Alleghany and Rocky Mountains.

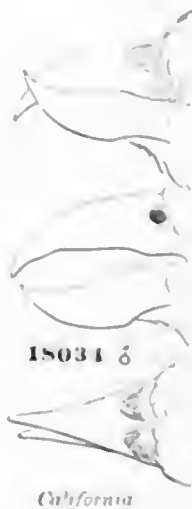
There are considerable differences both in color and size, especially of bill, in specimens from various parts

of North America, and to a less degree from the same locality. While those of the Atlantic and Pacific coast have bills of much the same size, in skins from the mountains of California this member is much stouter; in this character approaching the *L. mexicana* of Strickland, in which the bill presents its maximum of the North American form.

It would not probably be far out of the way to consider the European and all the American common Crossbills as the same species, differing only as races, and perhaps including *L. himalayana*, which is smaller even than *americana*.

We have not observed any American Crossbills with two reddish bands across the wing-coverts, corresponding to the variety *rubrifasciata* of Europe.

L. pytiopsittacus of Europe is much the largest of all the species, measuring seven inches in length, and with the bill seven lines high at base.



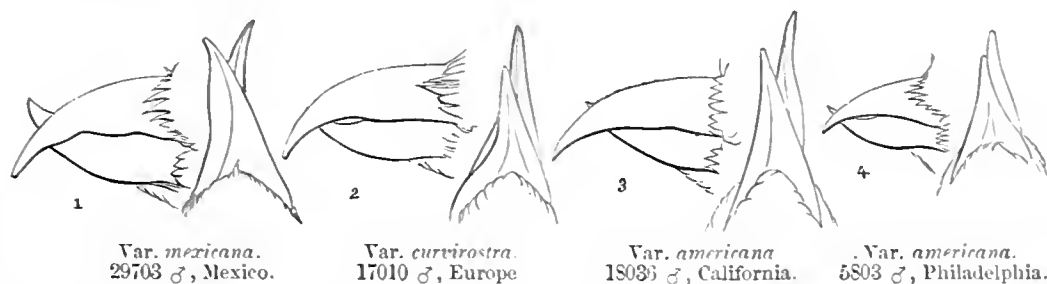
In the intensity, as well as the shade of the red in the males, there is a great range of variation. Generally it is of a tint almost precisely like that of *L. curvirostra*, though deeper. The most highly colored specimen is 54,795, Philadelphia (J. H. McIlvaine), which is entirely continuous deep tile-red, approaching vermilion on the rump. The abdomen and crissum are light pinkish. In No. 31,459, Fort Rae, April, the red is of a curious and very unusual purplish wine-red shade.

The average of western specimens, particularly those from the northwest coast of the United States, have bills scarcely larger than in the average of eastern examples; thus, 18,037, Fort Crook, N. Cal., has the bill of the same size as No. 5,803, Philadelphia, while No. 53,482, East Humboldt Mountains, has the bill smaller than any other in the collection.

In color, there are scarcely any tangible differences between the European *Loxia curvirostra* and the two American varieties, the distinctive character being in the form of the bill and the size; the *C. mexicana* is the largest of the three, and the bill is quite peculiar in form, the lower mandible almost equalling the upper in length, and exceeding it in thickness. *L. curvirostra* is slightly smaller, and has the lower mandible much smaller and less powerful than the upper, being inferior to it both in length, breadth, and thickness. The colors also appear to be rather less intense than in *C. mexicana*.

The *C. americana* is in every way, the bill especially, smaller than either of the preceding. The lower mandible, although but slightly shorter than the upper, is still much weaker, as in the European bird. The majority of western birds have the bill but slightly larger than eastern, and most of those with large bills are only intermediate between *americana* and *mexicana*. In some specimens the bill, although almost equalling in length that of the latter, has yet the form of the former; on the other hand, there are specimens with the proportions of the mandibles as in *mexicana*, while the size is intermediate.

The following figures will illustrate the differences in the size of the bills of the different races.



Specimens from the Columbia River region and northwest coast of the United States appear to have the red more rosaceous and the bill more slender than the typical style. One specimen (No. 31,459, Fort Rae) is altogether a very peculiar one; the shade of red is different from that of any other specimen, being a dark maroon-carmine, with a clear ash suffusion on the back. There are two distinct dusky stripes on the cheek, one over the

upper edge of the ear-coverts, the other along the lower edge. The lining of the wing is without any red tinge, seen in all specimens of the true *americana* and *mexicana*; the wings and tail are pure sepia-brown, quite different from the others; and the feathers show no red margins. The lower mandible is very much curved. (May not this be like some Siberian style?)

No 21,868, from Washington Territory, has the bill nearly as slender as in *C. leucoptera*, but there is nothing else peculiar.

HABITS. The common Red Crossbill of America is a bird of very irregular distribution, abundant in some places at certain seasons, and again rarely seen for several years. It is a Northern species, found in summer chiefly in the more northern portions of the United States, and also found throughout the year in the Alleghanies, in Pennsylvania, Maryland, and Virginia, to Georgia. A closely allied variety is also found in the alpine regions of Vera Cruz and other departments of Mexico.

Dr. Suckley found this species quite abundant at Puget Sound, in certain seasons. This was especially so in the spring of 1854, though afterwards he met with but few. He noticed a pair on the ground near a pool of rain-water. They were very tame, and allowed a near approach. Dr. Cooper found it very abundant near the coast, where it feeds, in winter, on the seeds of the black spruce, retiring in summer to the mountains to breed, but returning in September. He never observed any in the fir forests of the Coast Range. In the Sierra Nevada, latitude 39°, Dr. Cooper found these birds in considerable numbers, September, 1863, and in winter they have been obtained about San Francisco. They seem to be most attracted to the forests of spruces, cypresses, and red-woods, the cones of which are most readily broken. They occasionally descend to the ground, in the Rocky Mountains, in search of the seeds of small plants, and also for water.

Mr. Bischoff obtained specimens of this species at Sitka, but it was not noticed in the territory of the Yukon River by Mr. Dall, or any of his party, and it was met with by Mr. Ridgway on the East Humboldt Mountains only. There they were occasionally seen among the willows and small aspens bordering the streams. Their common note was a fine and frequently repeated *chick-chick-chick*, very different from the plaintive notes of the *C. leucoptera*.

In New England they are of somewhat irregular occurrence, though in Maine and in the northern portions of Vermont and New Hampshire they are more or less resident. In Eastern Massachusetts they are comparatively rare, excepting that, at irregular intervals, they come in large flocks during the winter. This was so to a remarkable degree in the winter of 1832, and more recently in 1862, when, Mr. Maynard states, they remained until April. They were then in their summer plumage, and also in full song. In August, 1868, they again became quite numerous, and had just before appeared in large numbers in Western Maine, doing great damage to the oats, and disappearing as soon as these had been harvested. Mr. Maynard thinks that these birds were the same with those afterwards so numerous in Massachusetts.

The same peculiarities of irregular appearance have been observed by Mr. Allen, in Springfield, where it is often a very abundant visitor, but generally not so common. In the winter of 1859–60 the pine woods in the vicinity of that city abounded with them, and in February they were already in full song. They are at all times gregarious, and are sometimes seen in large flocks.

They have, as they fly, a loud, peculiar, and not unmusical cry. This call-note they do not utter when at rest or when feeding. Their song in the spring and summer is varied and pleasing, but is not powerful, or in any respect remarkable. This song is especially noticeable in caged birds, who soon become very tame, and feed readily from the hand, even when taken at an adult age. Their manners in confinement are very like those of the Parrots, clinging to the top of the wires with their claws, hanging with their heads downward, and, when feeding, holding their food in one claw. On the trees, their habits and manner are also said to be similar to those of Parrots.

Mr. Audubon has found these birds, in August, in the pine woods of Pennsylvania, and inferred that they breed there. This does not necessarily follow. They breed so early at the north as to give ample time for their migrations, even in midsummer, to remote places. Professor Baird, however, informs me that during a summer spent in the mountains of Schuylkill County, Penn., in the coal region, he saw them nearly every day, moving about or feeding, in pairs.

The Crossbills are extremely gentle and social, are easily approached, caught in traps, and even knocked down with sticks. Their food is chiefly the seeds of the *Conifera*, and also those of plants. Audubon's statement that they destroy apples merely to secure the seeds is hardly accurate. They are extravagantly fond of this fruit, and prefer the flesh to its seeds. Their flight is undulating, somewhat in the manner of the Goldfinch, firm, swift, and often protracted. As they fly, they always keep up the utterance of their loud, clear call-notes. They move readily on the ground, up or down the trunks and limbs of trees, and stand as readily with their heads downward as upright.

Wilson states that in the interior of Pennsylvania this species appears in large flocks in the winter, and during the prevalence of deep snows they keep about the doors of dwellings, pick off the clay with which these huts are plastered, and are exceedingly tame and not easily driven off.

So far as is known, these Crossbills breed in midwinter, or very early in the spring, when the weather is the most inclement. The nest and eggs of this species were procured by Mr. Charles S. Paine, in East Randolph, Vt., early in the month of March. The nest was built in an upper branch of an elm, — which, of course, was leafless, — the ground was covered with snow, and the weather severe. The birds were very tame and fearless, refusing to leave their eggs, and had to be several times taken off by the hand. After its nest had been taken, and as Mr. Paine was descending with it in his hand,

the female again resumed her place upon it, to protect her eggs from the biting frost. The eggs were four in number, and measured .85 by .53 of an inch. They have a greenish-white ground and are beautifully blotched, marbled, and dotted with various shades of lilac and purplish-brown.

***Loxia curvirostra*, var. *mexicana*, STRICKLAND.**

MEXICAN CROSSBILL.

Loxia mexicana, STRICKLAND, Jardine Contrib. Orn. 1851, 43. — SELATER, P. Z. S. 1859, 365. — Ib. 1864, 174, City of Mexico. — SALVIN, Ibis, 1866, 193 (Guatemala).

SP. CHAR. Colors of *americana*, but red brighter, more scarlet. Bill very large, the lower mandible nearly or quite equal to the upper in strength and length. Wing, 4.00; tail, 2.50; bill (from forehead) .82.

HAB. Mountainous regions of Southern North America, from Guatemala, north into Rocky Mountains of United States; Mexico, Orizaba.

This bird is quite as well marked as any of the plain-winged "species," differing from *curvirostra* and *americana* quite as much as they do from each other.

All specimens from Mexico, as well as from the Central Rocky Mountains of the United States, are referrible to this form, though in winter the *americana* may also be found in the latter region, as a migrant from the north.

HABITS. The occurrence of this well-marked race among the mountainous districts of Mexico is a very interesting and suggestive fact in regard to the distribution of birds, demonstrating, as it does, the close connection between high latitudes and high elevations as favoring similar forms. It was first described by Strickland from specimens obtained on the plateau near the city of Mexico. Another specimen is referred to by Mr. Selater as having been received from Jalapa, Mexico; and Mr. Sumichrast obtained also a single specimen of this species at Moyoapam, in the alpine region of Orizaba, where it is known as the *Pico cruzado*. It was taken at an elevation of about 7,500 feet. Mr. Sumichrast was unable to determine whether this bird was resident, or only a migratory visitant in the winter. I can find no reference to any distinctive peculiarities of habits.

***Loxia leucoptera*, GMELIN.**

WHITE-WINGED CROSSBILL.

Loxia leucoptera, GM. Syst. Nat. I, 1788, 540. — ARD. Orn. Biog. IV, 1838, 467, pl. cccxiv. — Ib. Birds Am. III, 1841, 190, pl. cci. — BOY. & SCHL. Mon. Loxien., 1850, 8, pl. ix. — GORTL. B. Gr. Britain, V, 1864 (killed England, Sept. 17). *Curvirostra leucoptera*, WILS. Am. Orn. IV, 1811, 48, pl. xxxi, f. 3. — BAIRD, Birds N. Am. 1858, 427. — DALL & BANNISTER, Tr. Ch. Ac. I, 1869, 281 (Alaska). — COOPER, Orn. Cal. I, 149. — SAMUELS, 293. *Curvirostra leucoptera*, BREHM, Naumannia, I, 1853, 254, fig. 20. *Loxia fulvirostra*, LATH. Index, Orn. I, 1790, 371.

SP. CHAR. Bill greatly compressed, and acute towards the point. Male carmine red, tinged with dusky across the back; the sides of body under the wings streaked with brown; from the middle of belly to the tail-coverts whitish, the latter streaked with brown. Scapulars, wings, and tail black; two broad bands on the wings across the ends of greater and median coverts; white spots on the end of the inner tertiaries. Female brownish, tinged with olive-green in places; feathers of the back and crown with dusky centres; rump bright brownish-yellow. Length about 6.25; wing, 3.50; tail, 2.60.

HAB. Northern parts of North America generally; Greenland (REINH. Ibis, III. 1861, 8); England, (September 17, GOTLD. Birds Great Britain).

The white bands on the wings distinguish this species from the preceding, although there are some other differences in form of bill, feet, wing, etc. There is less variation in form and color among specimens than in the preceding. It differs from the European analogue, *L. bifasciata*, according to authors, in the more slender body and bill, and in having the body pomegranate-red, with blackish back, instead of cinnabar-red, as in *curvirostra* and *americana*. Bonaparte and Schlegel quote the American species as occurring in the Himalaya Mountains, and perhaps Japan, but throw doubts on the supposed European localities.

HABITS. Both the distribution and habits of this species are probably, in all essential respects, the same with those of the preceding. It is, if anything, a more northern bird, and it has not been detected anywhere on the Pacific coast south of British America. It was found in the Arctic regions by Sir John Richardson, where the other species was not observed. He found it inhabiting the dense white-spruce forests of the fur country, feeding principally on the seeds of their cones. Up to the sixty-eighth parallel he found them ranging through the whole breadth of the continent. It is supposed to go as far as these woods extend, though it has not been traced farther than the sixty-second degree. It was found feeding on the upper branches, clinging to them when wounded, and remaining suspended even after death. In September they collected in small flocks, and flew from tree to tree with a chattering noise. In the depth of winter they retire from the coast to the thick woods of the interior.

A few individuals of this species are recorded by Professor Reinhardt as having been taken in South Greenland.

In Pennsylvania this species is much more rare than the *americana*, and Wilson only met with a few specimens. Since his day it has been found more abundantly, occasionally in the neighborhood of Philadelphia.

Mr. Dall states that these birds were not uncommon near Nulato in the winter. Several specimens were obtained in February and April. None were found there in the summer. He speaks of their great expertness in opening the spruce cones with their curved bills, and extracting the seeds.

Its appearance in Eastern Massachusetts is much more irregular both as to numbers and time than that of the other species. In the fall and winter of 1868 and 1869 they were uncommonly abundant, appearing early in the fall, and remaining until quite late in the spring. They were even more fearless

and tame than the *americana*, and in one instance a pair were taken by the hand, and afterwards kept in confinement. They appeared around Boston in large flocks, and remained through April. One was shot in Newton by Mr. Maynard, June 13. It was found in an apple-tree, and its crop was full of canker-worms. In Eastern Maine it is resident throughout the year, and, like the other species, breeds in winter. In Western Maine Professor Verrill has found it a common winter visitant, but it is not known to be resident.

Near Springfield Mr. Allen considered this species a much less frequent visitor than the preceding. In the winters of 1854 and 1860 he found them very abundant, occurring in large flocks.

Mr. Audubon, on his way to Labrador in 1833, found these birds quite common, in May, among the islands of the Bay of Fundy, evidently migrating, on their way to more northern regions. I, however, observed none there during my visits in the summers of 1850 and 1851, although a specimen was afterwards obtained on the Murre Islands, on the 30th of June.

So far as they are known, the habits of this species are exactly similar to those of the preceding. They feed in the same manner and upon like food. Their flight is undulating and well sustained, and their movements in the trees are not perceptibly different.

In the spring of 1869, Mr. Jillson, of Hudson, Mass., sent me a pair of these birds which he had captured the preceding autumn. They were very tame, and were exceedingly interesting little pets. Their movements in the cage were like those of caged parrots in every respect, except that they were far more easy and rapid. They clung to the sides and upper wires of the cage with their feet, hung down from them, and seemed to enjoy the practice of walking with their head downward. They were in full song, and both the male and the female were quite good singers. Their songs were irregular and varied, but sweet and musical. They ate almost every kind of food, but were especially eager for slices of raw apples. An occasional larch cone was also a great treat to them. Although while they lived they were continually bickering over their food, yet when the female was accidentally choked by a bit of eggshell her mate was inconsolable, ceased to sing, refused his food, and died of grief in a very few days.

The White-winged Crossbill was seen more frequently by Mr. Ridgway among the East Humboldt Mountains than the other species. It was first noticed on the 12th of August among the cedars on the mountains. Its fine plaintive cry of "*weēk*" was entirely different from the hurriedly uttered notes of the *C. americana*.

Several specimens of this Crossbill have been taken in Europe, where their occurrence is of course accidental, irregular, and rare.

A nest of this species (S. L. 13,452), taken at Fredericton, New Brunswick, by Dr. A. Adams, in 1868, is deeply saucer-shaped, and composed of a rather thin wall of fibrous pale-green lichens, encased on the outside with spruce

twigs, and thinly lined with coarse hairs and fine shreds of inner bark. Its external diameter is a little less than four inches, the rim being almost perfectly circular; the cavity is an inch and a half deep by two and a half broad.

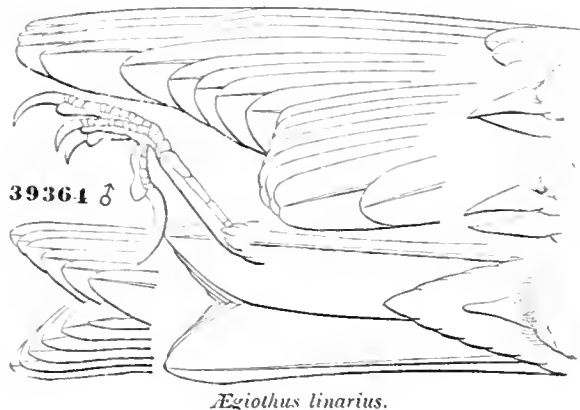
The one egg is pale blue, the large end rather thickly spattered with fine dots of black and ashy-lilac; is regularly or rather slightly elongate-oval, the small end rather obtuse. It measures .80 of an inch in length by .56 in breadth.

GENUS **ÆGIOTHUS**, CABAN.

Acanthis, BONAP. Conspectus, 1850, not of Bechstein, 1802, nor of Keys. & Blas. 1840.

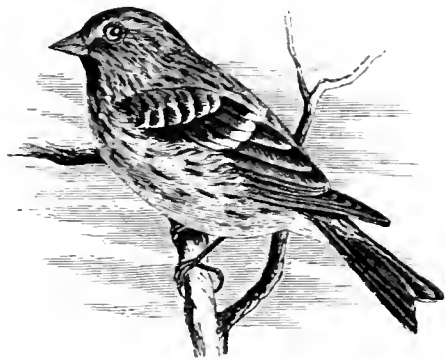
Ægiothus, CABANIS, Mus. Hein. 1851, 161. (Type, *Fringilla linaria*, LINN.) — COUES, Pr. Acad. Nat. Sc. Phil. 1861, 373; 1863, 40; 1869, 180.

SP. CHAR. Bill very short, conical, acutely pointed, the outlines sometimes concave; the commissure straight; the base of the upper mandible and the nostrils concealed by stiff, appressed bristly feathers; middle of the mandible having several ridges parallel with the culmen. Inner lateral toe rather the longer, its claw reaching the middle of the middle claw; the hind toe rather longer, its claw longer than the digital portion. Wings very long, reaching the middle of the tail; second quill a little longer than the first and third. Tail deeply forked.



Ægiothus linarius.

Difficult as it sometimes is to define with precision the characters of closely allied species of birds, there are few genera where this is the case more strikingly than in *Ægiothus*. Leaving out of view the peculiar European species, it has been a mooted question whether North America, including Greenland, possesses one, two, or six species, owing to the strictly boreal distribution of these birds, and the fact that their summer resorts are seldom invaded by the naturalist. The necessary means of determining the proper distribution of the forms and the variations with season, locality, and sex, are scarcely to be met with in any public museum, that of the Smithsonian Institution, however, being the most complete in this respect.



Ægiothus linarius.

To Dr. Coues, as quoted above, we owe the most satisfactory indications of the different species and varieties, his papers in the Proceedings of the Philadelphia Academy of Natural Sciences

(1861, 375; 1863, 40; and 1869, 180) being models of ornithological criticism and discussion. His labors have enabled us to define with precision the various forms, both European and American, found in the genus, and have brought us to satisfactory conclusions in reference to their limitations.

Mr. Ridgway has lately made a careful revision of the specimens of *Ægiotus* in the Smithsonian collection, and with a general concurrence in the conclusions of Dr. Cones in regard to the differences observable, he suggests, as an application of the laws more recently verified by him and myself in our examination of the North American land-birds, that we may best consider the actual species to be two in number, namely, *caneescens* and *linarius*, ranging the other forms under these, either as geographical races or as seasonal stages. Bearing in mind the general law that the more boreal or Greenland-born specimens should be larger than the more southern or Continental, and that the peculiar dark plumage of *fuscescens* and *rostratus* only occurs in summer breeding specimens, he considers these as identical with *linarius* and *holböllli*; the winter plumages respectively of the same two races of one species, *linarius*; the latter race, *holböllli*, being the larger or Greenland form. If *fuscescens* be darker than summer *linarius* from Europe, it is simply another instance of the darker tints of Arctic American birds as compared with European.

Ægiotus caneescens and *erilipes* Mr. Ridgway considers as the Greenland (larger) and Continental (smaller) races of one species, which perhaps do not differ so much with season as do those of *linarius*. The differences in the size and proportions of bill, and perhaps of feet, Mr. Ridgway does not think of much importance, as great variations are observable in this respect in specimens from the same locality, and the actual differences of the bill are obscured by the greater length of the bristly feathers around its base in winter, making it appear considerably shorter. Indeed, Professor Alfred Newton maintains that the same bird will have the bill considerably longer in summer, after living on soft insect food, and shorter in winter when worn down by use on hard seeds. Mr. Ridgway finds, too, that specimens of *linarius* from Kodiak differ in a much longer and more slender bill than usual, in this respect resembling Alaska specimens of several other *Fringillidae*.

The following synopsis expresses Mr. Ridgway's views as indicated above: a critical examination of a series of more than two hundred specimens, in the collection of the Smithsonian Institution, being the basis of his conclusions. — S. F. B.

Species and Varieties.

COMMON CHARACTERS. *Adult*. Above streaked with dusky upon a brownish, or brown and whitish, ground; wing-coverts tipped with whitish or pale brown. Beneath whitish, streaked on the sides with dusky. An indistinct, lighter superciliary stripe. *Male*. Rump tinged with rose-pink. *Female*. Rump not tinged with pinkish. *Juv*. Without any red, and with the whole lower parts thickly streaked.

A. Crown with a quadrate patch of crimson, in adult; throat and chin with a dusky spot; quills and tail-feathers not edged conspicuously with white. ♂ with the breast tinged with red.

1. **A. canescens.** Rump unstreaked white (both sexes, at all seasons); the lower tail-coverts with white shafts; the red tinge on the breast in the ♂, of a delicate pale rosaceous-pink tint.

Bill very short and thick, its height through the base nearly equalling the length of the culmen. Wing, 3.20; tail, 2.65. Bill: culmen, .35; height, .30. *Hab.* Greenland . . . var. *canescens*.

Bill much smaller, more acute, its height through the base much less than the length of the culmen. Wing, 3.00; tail, 2.50. Bill: culmen, .30; height, .22. *Hab.* Continental arctic America

var. *exilipe*.

2. **A. linarius.** Rump always streaked; lower tail-coverts with dusky shaft-streaks; the red tinge on the breast of the ♂ of a rosaceous-carmine tint.

Bill about .35 in length by .22 in height; wing, 2.80; tail, 2.40. *Hab.* Continental arctic and cold temperate North America

var. *linarius*.

Bill about .40, or more, in length, by .30 in height; wing, 3.20; tail, 2.60. *Hab.* Greenland in summer, and Continental arctic and cold temperate North America in winter . . . var. *holbölli*.

B. Crown without any red; throat and chin without any dusky spot; quills and tail-feathers of adult male edged conspicuously with white. ♂ without red tinge on the breast.

3. **A. flavirostris.** Rump rose-pink in the ♂, brown streaked with dusky in ♀. No red on crown or breast.

♀. Above umber-brown streaked with dusky; ground-color of rump light brown; throat and jugulum strongly ochraceous-buff.

Hab. Europe . . . var. *flavirostris*.

♀. Above olive-brown streaked with dusky; ground-color of rump sulphur-yellow; throat and jugulum faintly sulphur-yellow,

tinged with buff. *Hab.* North America . . . var. *brewsteri*.

Ægiothus linarius, CABANIS.

LESSER RED-POLL.

Fringilla linaria, LINN. Syst. Nat. I, 1766, 322. — AUD. Orn. Biog. IV, 1838, 538, pl. cccxxv. *Fringilla (Acanthis) linaria*, KEYS. & BLAS. Wirb. Europ. 1840, No. 115, page 161. — *Acanthis linaria*, BP. Conspectus, 1850, 541. *Ægiothus linaria*, CABANIS, Mus. Hein. 1851, 161. — BAIRD, Birds N. Am. 1858, 428. — COUES, Pr. A. N. S. Nov. 1861, 382. — COOPER & SUCKLEY, 198. — SAMUELS, 294. — MAYNARD, B. E. Mass. 1870, 110. — DALL & BANNISTER, Tr. Chic. Acad. I, 1869, 281. — COOPER, Orn. Cal. I, 159. *Linaria minor*, SW. F. Bor. Am. II, 1831, 267. — AUD. Syn. 1839, 114. — IB. Birds Am. III, 1841, 122, pl. clxxxix. ? *Linaria holbölli*, BREHM, Vögel Deutschlands. *Acanthis holbölli*, BP. & SCHLEGEL, Mon. Loxiens, 1850, 50, pl. liii. *Ægiothus holbölli*, COUES, Pr. A. N. S. 1861, 385. *Linaria americana*, MAX. Cab. Journ. VI, 1858, 338. *Ægiothus fuscescens*, COUES, P. A. N. S. Aug. 1861, 222 (Labrador; breeding dress). — IB. p. 380. *Ægiothus rostratus*, ELLIOT, Illust. B. Am. I, pl. ix. — COUES, P. A. N. S. Nov. 1861, 378 (Greenland). — ELLIOT, Illust. Birds N. A. I, pl. x.

I. *Spring and Winter Plumage*

SP. CHAR. *Adult*. Ground-color of the occiput, nape, scapulars, and interscapulars, brownish-white, each feather with medial streak of dusky-brown; rump and upper tail-coverts white, with the streaks in sharper contrast. Wings clear brownish-dusky with two conspicuous white bands, formed by tips of middle and secondary coverts; tertials broadly, and secondaries narrowly, edged with white; tail-feathers narrowly edged with white, this broader on inner webs. A narrow frontal band (tinged with brownish), an obscure superciliary stripe, and the lower parts in general, white; sides streaked with dusky, and lower tail-coverts each with a medial streak of the same. On the forehead and vertex a somewhat quadrate patch of intense carmine. Nasal plumuli, lores, and a small, somewhat quadrate, gular spot, dark silky-brown. Bill yellow, the culmen and gonys black.

♂. Throat, jugulum, and breast, rosaceous-carmine (extending upward over the maxillæ, and backward over the sides almost to the flanks); rump tinged with the same.

Var. *linarius* (21,577, Philadelphia). Wing, 2.80; tail, 2.35; bill, .35 and .22; tarsus, .55; middle toe, .30.

Var. *holbølli* (39,263, Quebec). Wing, 3.00; tail, 2.40; bill, .42 and .29; tarsus, .60; middle toe, .37.

Var. *holbølli*? (52,457, Kodiak). Wing, 3.00; tail, 2.40; bill, .47 and .25; tarsus, .55; middle toe, .35.

♀. No red except on the crown, where its tint is less intense; dusky gular spot larger, extending farther on to the throat.

Var. *linarius* (902, Penn.). Wing, 2.70; tail, 2.30; bill, .32 and .23; tarsus, .55; middle toe, .32.

Var. *holbølli* (39,362, Quebec). Wing, 3.10; tail, 2.50; bill, .42 and .29; tarsus, .61; middle toe, .39.

Var. *holbølli*? (52,460, Kodiak). Wing, 2.80; tail, 2.30; bill, .39 and .23; tarsus, .54; middle toe, .32.

II. *Summer or Breeding Plumage.*

The pattern the same as above, but the dark tint intensified and spread so as to almost entirely obliterate any lighter markings, except the streaks on the rump; the wing-bands as well as the dorsal streaks obsolete; streaks on the sides broader; frontal band dusky like the occiput. Red tints slightly intensified. Bill wholly dusky.

♂. Throat, jugulum, breast, and tinge on sides and rump, rose-carmine.

Var. *linarius* (type of "*fuscescens*"). Wing, 2.80; tail, 2.30; bill, .36 and .25; tarsus, .53; middle toe, .33.

Var. *holbølli* (type of "*rostratus*"). Wing, 3.00; tail, 2.35; bill, .41 and .30; tarsus, .60; middle toe, .40.

Var. *holbølli*? (54,477, Kodiak, July). Wing, 2.90; tail, 2.20; bill, .40 and .25; tarsus, .56; middle toe, .32.

♀. No red except on the crown.

Var. *linarius* (♀ type of "*fuscescens*"). Wing, 2.80; tail, 2.30; bill, .35 and .25; tarsus, .52; middle toe, .34.

Young (first plumage). (54,478, Kodiak, July.) Streaks covering whole head, neck, and breast; no red (RIDGWAY).

HAB. Circumpolar regions. In North America breeding in the sub-arctic regions, and in winter descending into the northern United States.

The two races of *A. linarius* are quite differently colored in summer and in winter. In the latter season the plumage is softer and more lax, and the markings better defined, though in autumn with a considerable ochraceous suffusion. In spring the colors are purer, and the markings most sharply

defined; in the breeding-season the plumage assumes a burnt appearance, the dark tints intensify and spread, so that sometimes the upper parts appear almost uniformly dusky; the bill appears larger, in consequence of the less development of its basal tufts, than in winter. In this dusky summer condition these birds form the *Æ. fuscescens* and *Æ. rostratus* of Coues, the latter being the summer plumage of var. *holbölli*, the former that of var. *linarius*. In the series of over two hundred examples examined, all midsummer specimens are in the plumage of *fuscescens* or *rostratus*, while the latter is not seen in any autumnal, winter, or spring birds.

Specimens of the var. *holbölli* have been received from Quebec, collected by Mr. W. Couper.

HABITS. Accepting as variations due either to locality, latitude, or season the differences already referred to in the plumage of this species, it is not necessary to consider the question of races in connection with our story of their habits. We possess but very little information as to their peculiarities as races in these respects. Treating, then, the Lesser Red-Poll, though appearing in four differing phases, as one species, we claim it to be common to the northern portions of both hemispheres.

It is found throughout northern North America from the Atlantic to the Pacific, is abundant in the boreal regions of Europe, and probably of Asia also. On the Pacific coast, Dr. Cooper has observed it only as far south as Washington Territory. Farther north it is much more abundant. Mr. Bannister found it common at St. Michaels, both in summer and in winter. At Nulato Mr. Dall found this species very common in winter, and very little less so in summer. He states that the nest is usually lined with hair, and covered externally with moss, dry grass, and like materials, built in bushes, near the ground. They begin to build the 15th of May. The eggs are laid about the 1st of June, and the young are flying near the end of July. The young of the first year are dark, with a small patch of brown on the breast. After their second year the males increase the amount of rose-color on the head and breast, and the very old birds are quite brilliant in the breeding-season. At St. Michaels, where there are no trees and very few bushes, these birds frequently build their nests in the grass.

Mr. Dall states that this bird has no song, but that their cheerful twittering and chirping, their fearless and sociable ways, their bright plumage and elegant nests, are quite enough to make them general favorites.

Richardson found this neat and hardy little bird one of the few permanent residents of the fur countries, where it was seen, in the coldest weather, on the banks of lakes and rivers, hopping among the reeds or clinging to their stalks.

Mr. Lord found this species a rare bird in British Columbia. It was found in swampy places, where the alders grew thickly, and where there were large water-plants. To these it clings, pecking at their seed-pods, or, searching the remaining flowers, feeds upon any insects they may contain. Their song he describes as a soft and pretty warble, coming in bursts, the singer perching

himself boldly on the top of a plant, as if to be more plainly heard by his companions. In early spring they feed on the catkins of the alder and hazel. They winter in small flocks in Vancouver's Island.

Holboll states that this species is found irregularly distributed over Greenland, coming always in the first half of April, a little later than the Snow-Bunting. It migrates to Greenland from America, and is much rarer in Iceland. In June it is found nesting near the shore, and, contrary to the usual nature of birds, is very wild, though at all times else it is very fearless. At this time the male loses its beautiful crimson breast, resembles the female, and is much less gorgeous than in winter. It nests in birches, alders, or willows, and lays five bluish-white eggs, spotted with clear brown. Towards the end of August and in September they are seen in small flocks about the settlements, the male resuming its red breast, and all, both old and young, being very fearless. In confinement they soon became very tame, and in a few days would perch upon his hand and struggle with each other for the hemp-seed that he held to them, though there was plenty of food in their cage. They feed on seeds and the tops of lichens. By October they all disappear, and are not seen in Greenland in the winter.

Wilson states that, in his day, these birds were very common in North-western New York, where they appeared always with the first deep snow, and were, on that account, called Snow-Birds. In severe winters they were occasionally, though very rarely, seen in the neighborhood of Philadelphia, where they were very fond of the seeds of the common alder, and hung head downwards while feeding, in the manner of our Goldfinch. They were very unsuspicious, and permitted a near approach without manifesting any signs of alarm. Mr. Ord, in a subsequent edition of Wilson, states that these birds rarely visit Philadelphia, and that it was many years before he could procure specimens. In the winter of 1813-14 they appeared in a flock of nearly a hundred, and were so intent in feeding upon the seeds of the *Atriplex hastata* that they could be closely approached. Their call exactly resembled that of the Goldfinch. These birds lingered in that neighborhood until about the middle of April.

Their migration southward in winter is evidently caused more by want of food than by the state of the temperature. They remain in high northern regions in the most inclement weather, and often appear among us in seasons not remarkably cold, and remain until late in the spring. In 1833, by the 7th of November, the weather still being quite mild, Nuttall states, they appeared in Massachusetts in considerable flocks. They regularly assembled in the birch-trees every morning to feed on the seeds, and were so intent on their employment that it was often possible to approach the slender trees on which they were feeding, and strike them off, before they would take wing. They hung on the twigs with great tenacity, and moved about in reversed positions, in the manner of the Chickadees. They are described by him as having a quailing call, similar to that of the Goldfinch, and when crowding

together, in flight, as making a confused chirping, with a rattling noise, and moving off with a simultaneous twitter. They were attracted to the pines by the Crossbills, and were busily employed in collecting the seeds, dropped from the cones as the Crossbills opened them. They at times fed on the buds of fruit-trees. They were always found to be fat, even on their first arrival, and there were no obvious reasons for their movements.

Mr. Boardman speaks of them as common at Calais by the first of the winter. At Norway, Me., Professor Verrill found them very common in fall, winter, and spring, and most abundant in March and April. In Springfield they are, according to Mr. Allen, an irregular and occasional visitant, coming in very large flocks one year, and again not seen for several years. In a more recent paper (1870) Mr. Allen states that during the preceding five years these birds have been several times very numerous in Massachusetts, appearing in quite large flocks.

Mr. Audubon met with these birds in Labrador the last of July, and obtained specimens of different ages. He thinks their notes more like those of the Siskin of Europe than of our Goldfinch, uttered both when the birds are on the wing and when they have alighted. They were in small parties of seven or eight, evidently members of the same family. They were tame and familiar, and fearlessly returned to the same spot after having been shot at. They were also remarkably affectionate, and he frequently observed them passing seeds one to the other in the most loving manner.

Dr. Cones also observed this bird in Labrador, and described it as *A. fuscescens*. He found it abundant along the coast, and was struck with its resemblance, in habits, to the *Chrysomitris tristis*. It was remarkably unsuspicious and familiar, and showed no signs of fear even when very closely approached. It frequented, almost exclusively, the scrubby junipers that grow everywhere in open places in thick impenetrable patches. He describes its flight as irregular, rising and falling in curves, and seldom protracted to any great distance. While passing overhead, it uttered a peculiar rattling chirp. He thinks it has no song.

Dr. Kirtland informs me that early in the winter of 1868 his grandson picked up a wing-broken male Red-Poll, and placed it in his greenhouse. It began at once to feed on crumbs of bread and hay-seed, and rapidly recovered. It soon acquired the habit of leaping from shelf to shelf, among the plants, and was finally seen climbing up some stately *Pelargonium* shrubs, and suspending itself, parrot-like, by its feet from the limbs, capturing aphides. From that time it took no other food, living exclusively on the parasitic insects of the plants. So active was it in capturing these, that for two months it was not necessary to fumigate the greenhouse to destroy them. From day to day a female Red-Poll hovered over the building, and her calls were responded to by the invalid. Later in the season he escaped from his confinement, and was seen to rejoin his faithful mate, which had remained near him all the winter. As in Europe, this species in the Arctic regions of America has been found nesting in low trees and bushes, from two to six feet from the ground.

The habits and appearance of the birds observed in Europe appear identical with those of our own. Mr. Yarrell states that of all birds these are the most easily tamed, and can be readily made to breed in confinement. In Scotland and in parts of England it is resident throughout the year, in the summer retiring to the bases of the mountains, and there breeding in the underwood that skirts the banks of the mountain streams. It nests in bushes or low trees, such as the alder and the willow. These are constructed of mosses and the stems of dry grasses, intermingled with down from the catkins of the willow, and lined with the same, making them soft and warm. The young are produced late in the season, and are seldom able to fly before the first of July. The parent birds are devoted in their attachment. Pennant relates that in one instance where this bird was sitting on four eggs, she was so tenacious of her nest as to suffer him to take her off with his hand, and after having been released she still refused to leave it. In the winter they descend to the lower grounds, and there feed on the buds of the birch and alder, to reach which they are obliged, like the Titmice, to hang from the ends of the branches, with their backs downward. So intent are they on their work that they are easily taken alive by means of a long stick smeared with birdlime. Mr. Selby states that its notes during the breeding-season, though not delivered in a continuous song, are sweet and pleasing. Captain Scoresby relates that in his approach to Spitzbergen several of these birds alighted on his ship. They were so wearied with their long journey as to be easily caught by the hand. The distance of the nearest point of Norway renders it difficult to imagine how so delicate a bird can perform this journey, or why it should seek such a cold and barren country. European eggs are five in number, of a pale bluish-green, spotted with orange-brown, principally about the larger end. They measure .65 by .50 of an inch.

American eggs of this species average .65 by .53 of an inch. Their color is a light bluish-white, which varies considerably in the depth of its shading, and this tinge is exceedingly fugitive, it being difficult to preserve it even in a cabinet. The eggs are generally and finely dotted with a rusty-brown, and are of a rather rounded oval shape.

Ægiothus canescens, CABANIS

MEALY RED-POLL.

Linaria canescens, GÜLDEN, "Birds Europe, pl. cxviii." *Linaria canescens*, BONAP. List, 1838. *Acrothia canescens*, BON. Conspectus, 1850, 541. — BON. & SCHLEGEL, Mou. Loxiens, 1850, 47, tab. II. — BOSS, Ed. Phil. Jour. 1861, 163. *Ægiothus canescens*, CABANIS, Mus. Hein. 1851, 191. — BAIRD, Birds N. Am. 1858, 429. — COUES, P. A. N. S. 1861, 388. — SAMUELS, 295. "*Fringilla borealis*, TEMMINCK, 1835. Not of Vieillot." Bonaparte. "*Fringilla borealis*, AUD. Orn. Biog. V, 1839, 87, pl. cccc. "*Linaria borealis*, AUD. Birds Am. III, 1841, 120, pl. clxxviii. "*Linaria borealis*, HOLBOELL, Kroyer Nat. Tidst. 1843. "*Ægiothus calypso*, COUES, Pt. A. N. S. Nov. 1861, 385. — ELLIOT, Illust. N. Am. Birds, I, pl. ix.

SP. CHAR. *Autumnal female*. Greenland race (*canescens*). (23,377, Greenland, Univ. Zoöl. Mus. Copenhagen.) In general appearance like the corresponding plumage of *Æ. linarius*, but the whole rump immaculate white; frontal band more than twice as wide as in *linarius*, and better defined; lower tail-coverts without streaks, their shafts even being white. Carmine vertical patch only a little wider than the whitish frontal patch; head with a strong ochraceous suffusion. Wing, 3.30; tail, 2.90; bill, .35 and .30; tarsus, .60; middle toe, .32. Wing-formula, 1, 2, and 3.

HAB. Greenland. Variations with season probably as in smaller Continental race.

Adult of both sexes in spring. Continental race (*exilipes*). As described for the Greenland form, but without the ochraceous suffusion. Sides very sparsely streaked.

Male in spring. Breast only tinged with delicate peach-blossom-pink, *this extending farther back medially than laterally*, — just the reverse of *Æ. linarius*; a very faint tinge of the same in the white of the rump. Measurements (No. 19,686, Fort Simpson, April 30, 1860; B. R. Ross, Coves's type): Wing, 3.00; tail, 2.55; bill, .29 and .25; tarsus, .52; middle toe, .30; wing-formula, 2, 1, 3, 4.

Female in spring. Similar, but lacking all red except that of the pileum, which is less intense, though not more restricted, than in the male. Measurements (No. 19,700, Fort Simpson, April 28; B. R. Ross): Wing, 2.80; tail, 2.35; bill, .25 and .22; tarsus, .51; middle toe, .30.

Both sexes in autumn. (♀, Fort Rae.) The white of the whole plumage, except on the rump, overspread by a wash of pale ochraceous, this deepest anteriorly; on the anterior upper parts a deep tint of ochraceous entirely replacing the white; wing-markings broader and more ochraceous than in the spring plumage. Wing, 2.85; tail, 2.50; bill, .30 and .25; tarsus, .51; middle toe, .30.

HAB. Continental arctic America. In winter south into the United States (as far as Mount Carroll, Illinois).

Though *Æ. canescens* is nearly identical with *Æ. linarius* in size, these two species may always be distinguished from each other by certain well-marked and constant differences in coloration; the principal of these have been mentioned in the synoptical table, but a few other points may be noted here. In spring males of *canescens* the delicate rosaceous-pink of the breast does not extend up on to the cheeks, and backward it extends farther medially than laterally, scarcely tingeing the sides at all; while in *Æ. linarius* the intensely rosaceous, almost carmine, tint covers the cheeks, and extends backward much farther laterally than medially, covering nearly the whole sides.

Though the weakness, or shortness, of the toes compared with the tarsus, is a feature distinguishing, upon almost microscopical comparison, the *Æ. canescens* in its two races from the races of *Æ. linarius*, it will not by any means serve to distinguish *canescens* and *exilipes*, since, as will be seen by the measurements given, the proportion of the toes to the tarsus is a specific, and not a race, character. (RIDGWAY.)

HABITS. The history of the Mealy Red-Poll can only be presented with some doubts and uncertainties. We cannot always determine how far the accounts given by others may have belonged to this species, and we can only accept, with some reserve, their statements.

This form, whether species or race, is known to inhabit Greenland, where, according to Dr. Reinhardt, it is constantly resident, and I have received its

eggs from that country, where its identification was apparently complete. Whether this bird is resident in, regularly migratory to, or only accidental in, Europe, is as yet a question by no means fully settled. Degland gives it as resident in Greenland only, and as accidental in Germany, Belgium, and the north of France. He states that it is known to nest in shrubs and in low trees, and that, in all essential respects, its manners are identical with the common Red-Poll. One of these birds was taken alive in a snare in the vicinity of Abbeville, and kept in a cage, making part of the collection of M. Baillon.

Yarrell thought that sufficient evidence existed of its specific distinctness, but Mr. Gould regarded it as a matter of doubt whether the birds found in Europe were natives, or only arrivals from northern America. He states that among the London dealers this bird, called by them the Stone Red-Poll, is well known, and is considered distinct, but that its occurrence is very rare. Occasionally, at great intervals, they are said to have been abundant.

Mr. Doubleday, of Epping, procured several specimens of this bird in Colchester, in January, 1836, and afterwards obtained a living pair, which he kept for some time. Their notes were much sharper than those of the *linarius*. Its occurrence was most frequent in winter, many specimens having been obtained in England, and some also in Scotland. Its habits throughout the year are supposed to be very similar to those of the common Red-Poll. Its food is said to be chiefly the seeds of various forest trees.

Mr. Temminck describes what is undoubtedly this species, under the title of *borealis*. If this supposition be admitted to be correct, its geographical distribution becomes much more clearly defined. He states that it is found during the summer in Norway and Sweden, and is resident of the Arctic Circle throughout the year, and is also found in Northern Asia, as well as in America and in other parts of Europe. He has received specimens from Greenland, and also from Japan, differing in no respect from those found in Europe.

Audubon states that he procured four specimens of this bird in Newfoundland. In their habits he could see no difference between them and the common Red-Poll, but did observe a noticeable difference in their song. He also states that one was shot by Mr. Edward Harris near Moorestown, N. J.

Mr. John Wolley, in his expeditions to Lapland, found there only one species of this genus which was clearly referrible to the Mealy Red-Poll, and was a common resident bird. One of these eggs from Lapland is larger and a much lighter-colored egg, than any of the common *linarius*. The ground is a greenish-white, sparingly spotted with dark reddish-brown about the larger end. Its measurement is .80 by .58 of an inch. An egg from Greenland is not perceptibly different in size, color, or markings.

Holboll, in his papers on the fauna of Greenland, demonstrates very distinctly the specific differences between this bird and the *linarius*. These are its stronger and broader bill, the difference in colors at every age, its

much greater size, its very different notes, and its quite different modes of life, the *cunescens* being a strictly resident species, and the *linarius* being migratory.

In the summer this species is found to the extreme north of Greenland, and has never been known to nest farther south than the 69th parallel. It is more numerous in North Greenland than the *linarius*, which is rare at the extreme north, while this is very common even at latitude 73°. This bird builds its nests in bushes in the same manner with *linarius*, and its eggs closely resemble those of that bird. Its notes, he adds, do not at all resemble those of the Red-Poll, but are like those of the *Ampelis garrulus*.

It is a resident of Greenland throughout the year, and in the winter keeps on the mountains in the interior, but is much more numerous at latitude 66° than farther south. In February, 1826, Holböll saw many flocks on the mountains between Ritenbank and Omanak, and in the journey taken in 1830 by a merchant from Holsteinborg into the interior of the country a great many flocks were observed. They are also frequently met with by reindeer-hunters, who go far into the interior. It is rarely found in South Greenland at any time, and never in the summer. In mild winters they sometimes come about the settlements, as happened in the winter of 1828–29, and again in 1837–38. In the intervening winters it was not seen at Godhaab, and in severe winters it is never to be found near the coast, only single specimens occurring there in spring and autumn.

Mr. MacFarlane thinks this species spends the winter at Fort Anderson, as he has met with it as late as December and as early as February, and believes it to have been present in the vicinity in the interval. It nests in May. Mr. Harriott found one of its nests on the branch of a tree, about five feet from the ground. It contained five eggs.

The egg of this species resembles that of the *linarius* except in size and its lighter ground-color. The ground is a bluish or greenish white, dotted with a tawny-brown. The egg is of a more oval shape, and measures .75 by .60 of an inch.

***Ægiothus flavirostris*,¹ var. *brewsteri*, RIDGWAY.**

BREWSTER'S LINNET.

SP. CHAR. General appearance somewhat that of *Æ. linarius*, but no red on the crown, and the sides and rump tinged with sulphur-yellow: no black gular spot. ♀ *ad*. Ground-color above light umber, becoming sulphur-yellow on the rump, each feather, even on the crown, with a distinct medial streak of dusky. Beneath white, tinged with fulvous-yellow anteriorly and along the sides; sides and crissum streaked with dusky. Wings and tail dusky; the former with two pale fulvous bands; the secondaries, primaries, and tail-

¹ *Fringilla linaria*, TEMM. Mass. Orn. 1835, 267 (not of Linnæus). "*Fringilla rufescens*, VIEILL. Faun. Franç. tab. 41, f. 1." *Linota montium*, BP. & SCHLEGEL, Mon. Lox. 1850. "*Linaria flavirostris*, BREHM."

feathers narrowly skirted with whitish sulphur-yellow. A dusky loreal spot, and a rather distinct lighter superciliary stripe. Wing, 3.00; tail, 2.50; tarsus, .50; middle toe, .30. Wing-formula, 1, 2, 3, etc.

HAB. Massachusetts.

As the present article on *Aegiothus* is going to press, we have received, through the kindness of Dr. Brewer, a specimen of what appears to be a third species of *Aegiothus*, allied to the *A. flavirostris* of Europe, obtained in Waltham, Mass., by Mr. William Brewster, of Cambridge. This bird was killed in a flock of *A. linarius*, of which five were also shot at the same discharge. None of the others, nor indeed of any of ninety specimens prepared by Mr. Brewster during the winter, were at all like the present one, which is entirely different from anything we have ever seen from North America.

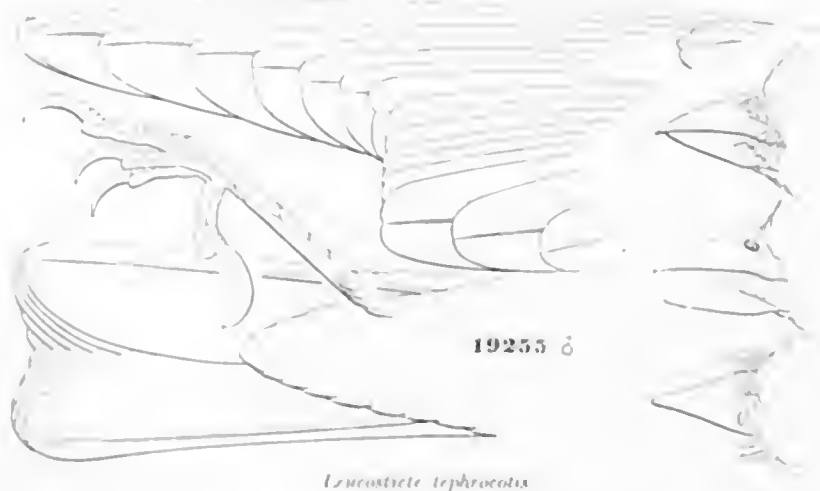
The relationship of this bird appears to be nearest to the *A. flavirostris* of Europe, with the ♀ of which it agrees in many respects, as distinguished from *linarius* and *canescens*. The European bird, however, lacks the sulphur-yellow tinge (which gives it somewhat the appearance of *Chrysomitris pinus*), has the throat and jugulum strongly reddish-buff, instead of dingy yellowish-white, and is much browner above; besides which the tail is longer and less deeply forked, with narrower feathers.

HABITS. Nothing distinctive was observed by Mr. Brewster in regard to the habits of the specimen killed by him.

GENUS *LEUCOSTICTE*, SWAINSON.

Leucosticte, SWAINSON, Fauna Bor. Am. II, 1831, 265. (Type, *Linaria tephrocotis*, Sw.)

GEN. CHAR. Bill conical, rounded, rather blunt at the tip; the culmen slightly convex; the commissure slightly concave; the nostrils and base of commissure concealed by

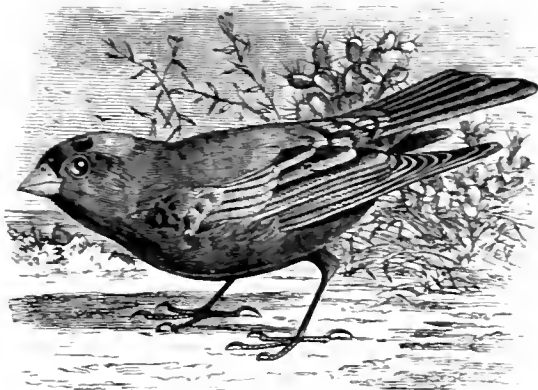


depressed bristly feathers; a depressed ridge extending about parallel with the culmen above the middle of the bill. Another more conspicuously angulated one extending

forward from the lower posterior angle of the side of the lower mandible, nearly parallel with the gonys. Tarsus about equal to the middle toe and claw. Inner toe almost the longer, its claw not reaching beyond the base of the middle one. Hind toe rather longer, its claw longer than the digital portion. Wings very long; first quill longest; all the primaries longer than the secondaries. Tail forked.

This genus differs from *Egiotus* in the more obtuse and curved bill, the less development of bristly feathers at the base, the ridge on the lower mandible, the lateral toe not reaching beyond the base of the middle one, and possibly a longer hind toe. Its relationship to the other allies will be found expressed in the synoptical table of *Coccothraustinæ*.

The number of American species, or at least races, of this genus has been increased considerably since the publication of *Birds of North America*, five now belonging to the American fauna, instead of the three there mentioned. Of the species usually assigned to the genus, one, *L. arctoa*, is quite different in form, lacking the ridge of the mandible, etc., and in having the ends of the secondaries graduated in the closed wing, instead of being all on the same line. The colors, too, are normally different; in *arctoa* being dusky, with silvery-gray wings and tail, without rose tips to the feathers of the posterior part of body; and in *Leucosticte* proper, the wings and tail being dark-brown narrowly edged with whitish, or more broadly, like the ends of the feathers of the body behind, with rose-color. For the present, however, we shall combine the species, not having before us any American specimens of *L. arctoa*.



Leucosticte tephrocotis

From the regular gradation of each form into the other — the extremes being thus connected by an unbroken chain of intermediate forms — it seems reasonable to consider all the North American forms as referable to one species (*L. tephrocotis*, Sw., 1831) as geographical races. They may be distinguished as follows:—

COMMON CHARACTERS. Body anteriorly chocolate-brown; posteriorly tinged with rose-red. Wing-coverts (broadly) and quills edged with the same. Head above light ashy or silvery-gray, as are also the feathers around the base of upper mandible; the forehead and a patch on crown blackish. Throat dusky.

Additional Characters. The chocolate-colored feathers and the secondary quills, sometimes the tail-feathers and greater wing-coverts, edged with pale brownish-white or fulvous; the interscapulars with darker centres. Rose of rump and upper tail-coverts in form of transverse bands at end of feathers, that of abdomen more a continuous wash. Lining of wings and axillars white, tinged with rose at ends of feathers. Feathers of crissum dark brown, edged with whitish, sometimes tinged with rose. Bill generally reddish or yellowish, with blackish tip.

A. Auriculars chocolate-brown.

1. Whole side of head below the eye, including the auriculars, chocolate-brown. Chin not bordered anteriorly with ash. In the breeding-season, head darker and ash wanting. Wing, 4.35; tail, 3.00; bill, .44; tarsus, .72. *Hab.* Interior regions of North America. var. *tephrocotis*.
2. Cheeks, lores, and anterior border of the chin ash-color. Wing, 4.00; tail, 2.80; bill, .44; tarsus, .70. *Hab.* Colorado and Wyoming Territories var. *campestris*.

B. Auriculars ash-color.

3. Wing, 4.30; tail, 3.00; bill, .40; tarsus (?). Chocolate of the breast, etc., light, exactly as in *tephrocotis*; rose beneath restricted to the abdomen; lores and chin light ash. *Hab.* Northwest coast from Kodiak to Fort Simpson, east to Wyoming Territory var. *littoralis*.
4. Wing, 4.60; tail, 3.40; bill, .40; tarsus, .78. Chocolate very dark, inclining to sepia; rose extending forward on to the breast; lores blackish; chin dusky gray. *Hab.* Aleutian Islands (St. George's, Unalaska, and Kodiak) var. *griseinucha*.

A closely allied species¹ from Kamtschatka and the Kurile Island differs mainly in having the nasal feathers as well as the head blackish, but without distinct patch on the top, and the nape rusty, in contrast with the back. It is about the size of *L. tephrocotis*. This species may yet be detected in the westernmost Aleutians.

Leucosticte tephrocotis,² SWAINSON.**GRAY-CROWNED FINCH.**

Linaria (Leucosticte) tephrocotis, Sw. F. Bor. Am. II, 1831, 255, pl. l. *Leucosticte tephrocotis*, Sw. Birds II, 1837. — Bon. Consp. 1850, 536. — Baird, Stansbury's Salt Lake, 1852, 317. — Ib. Birds N. Am. 1858, 430. — Cooper, Orn. Cal. I, 164. *Erythropsitta tephrocotis*, Bon. List, 1838. — Aud. Syn. 1839. — Ib. Birds Am. III, 1841, 176, pl. excviii. *Fringilla tephrocotis*, Aud. Orn. Biog. V, 1839, 232, pl. ccccxiv.

Sp. Char. (No. 19,255.) *Male in winter.* General color dark chocolate-brown or umber, lighter and more chestnut below; the feathers to a considerable degree with paler edges (most evident in immature specimens), those of back with darker centres. Nasal bristly feathers, and those along base of maxilla, and the hind head to nape ash-gray, this color forming a square patch on top of head, and not extending below level of eyes. A

¹ *Leucosticte brunneinucha*. *Fringilla (Linaria) brunneinucha*, Brandt, Bull. Acad. St. Petersburg, 1841, 35. *Montifringilla (Leucosticte) brunneinucha*, Bon. & Schlegel, Mon. Loxicus, 1850, 36, pl. xlii.

² As this sheet is going through the press, we have been permitted by Mr. J. A. Allen to examine a series of birds, obtained by him in July, 1871, on Mt. Lincoln, Colorado, above the timber line, where they were breeding abundantly. Although very different from winter *L. tephrocotis*, they yet strongly suggest the idea of their being that species in summer dress. They present the following characteristics:—

Breeding plumage. Differing from the stage first described above, in entire absence of any ash about the head, and in deep black, instead of yellowish bill. ♂ with the red tints intense carmine, instead of pale bluish-pink, that of the abdomen extending farther forward. ♀ lacking the red, or with only a tinge of it. Hood dark vandyke-brown, becoming nearly black on

frontal blackish patch extending from base of bill (excepting the bristly feathers immediately adjacent to it), and reaching somewhat beyond the line of the eyes, with convex outline behind, and extending less distinctly on the loreal region. Chin and throat darker chestnut, not grayish anteriorly. Body behind dusky; the feathers of abdomen and flanks washed, and of crissum, rump, and upper tail-coverts tipped, with rose-red; wing-coverts, and to some extent quills, edged with the same; otherwise with white. Bill yellowish, with dusky tip; feet black. Length before skinning, 6.50; extent, 11.50. Skin: Length, 6.50; wing, 4.30; tail, 3.00.

Young. Pattern of coloration as in the adult of *L. tephrocotis*; ash similarly restricted, but with the black frontal patch badly defined. The brown of the plumage, however, is of an entirely different shade from that of adult specimens of *tephrocotis*, being of a blackish-sepia cast, much darker, even, than in *griseinucha*; each feather also broadly bordered terminally with paler, these borders being whitish on the throat and breast, brownish on the nape and back, and light rose (broadly) on the scapulars. The whole abdomen, flanks, and crissum are nearly continuously peach-blossom pink, which, with that of the lesser and middle wing-coverts and rump, is of a finer and brighter tint than in adults. The other edgings to wings are pale ochraceous; under side of wing pure white. Bill dull yellow, dusky toward tip. Wing, 4.20; tail, 3.80. (60,638, Uintah Mountains, Utah, September 20, 1870; Dr. F. V. HAYDEN.)

The young specimen described was obtained during the summer of 1871 in the Uintah Mountains; and were it not unmistakably a bird of the year, it would be considered almost a distinct species, so different is it from adult specimens of *tephrocotis*.

HABITS. Of the history and habits of this well-marked and strikingly peculiar bird, but little is known. It was first described by Swainson from a single specimen, obtained on the Saskatchewan Plains, in May, by Dr. Richardson's party. Specimens were afterwards procured in Captain Stansbury's expedition, near Salt Lake City, Utah, in March, 1850. Dr. Hayden found them very abundant on the Laramie Plains during the winter season, and Mr. Pearsall obtained numbers about Fort Benton. Dr. Cooper has also seen one specimen brought from somewhere east of Lake Tahoe, in Washoe, by Mr. F. Gruber. They were said to be plentiful there in the cold winter of 1861-62. Dr. Cooper thinks it probable that they visit the similar country east of the northern Sierra Nevada, in California.

A single flock of what is presumed to have been this species was seen by Mr. Ridgway, on the 5th of January, in the outskirts of Virginia City, Ne-

the forehead; rest of head light chocolate-brown, similar to, but more faded than, that of the winter plumage; nasal tufts grayish-white.

Ten specimens collected by Mr. Allen all agree in the characters pointed out, by which they differ from the winter plumage of *L. tephrocotis*. Taking into consideration the fact of their black instead of yellowish bill, more intense red, and generally more dusky colors, as well as the other points of distinction from the previously known plumages of *L. tephrocotis*, and also that they are identical in size and proportion, while specimens of *L. tephrocotis* in the breeding plumage have not before been seen, it seems very reasonable to suppose that these specimens represent the breeding plumage of that species. There is some resemblance to *L. brunneinucha*, which, from the plate in Bonaparte and Schlegel's monograph of the *Coccothraustinae*, seems to differ mainly in being lighter colored. Mr. Allen says that these birds were breeding abundantly in the locality where they were found.

vada. The flock was flitting restlessly over the snow in the manner of the *Plectrophanes*.

Nothing has been ascertained, so far as we are now informed, as to its nest, eggs, or general distribution during the breeding-season.

Mr. J. K. Lord states that he met with a flock of these rare and beautiful birds on the summit of the Cascade Mountains. It was late in October, and he observed a flock of nine or ten birds pecking along the ground, and feeding somewhat in the manner of Larks. Puzzled to know what birds they could be at such an altitude so late in the year, he fired among them and secured three, a female and two males in fine plumage. (Perhaps var. *littoralis*.)

In July of the following summer, on the summit of the Rocky Mountains, near the Kootanie Pass, he again saw these birds feeding on the ground. He shot several, but they were all young birds of the year. It is therefore rendered probable that these Finches breed on the Cascade and Rocky Mountains, in both at about the same altitude, or seven thousand feet, coming into the lowlands during the winter, as it is not likely that they could endure the cold of the summits, or find there a sufficiency of food, the winter being very severe, and the snow three feet or more in depth.

Mr. Charles N. Holden, a promising young ornithologist of Chicago, who observed these birds among the Black Hills, near Sherman, at an altitude of eight thousand feet above the sea, has furnished me with interesting observations in regard to them. He informs me that he did not meet with these birds there in summer. They came in small flocks in the coldest part of winter. Their food consisted of small seeds and insects. In some instances he found the crops so distended with seeds as to distort their shape. They become very fat, and are excellent eating. In one specimen, a young male, the plumage was almost black, as described at the beginning of this article. These birds were quite numerous, and nearly forty specimens were secured. He was not able to learn anything in reference to their breeding-places. Except by dissection, he found it difficult to distinguish between a young male of the first year and a female.

If the specimen referred to in the foot-note at the beginning of this article as collected by Mr. Allen on Mount Lincoln be really this species, an important advance in its history will have been reached, showing that their summers are spent in the high mountain summits, and that the rest of the year is passed lower down on the plains.

Leucosticte tephrocotis, var. campestris, BAIRD.**THE GRAY-CHEEKED FINCH.***Leucosticte campestris*, BAIRD, COOPER, Orn. Cal. I, 163, 1870.

SP. CHAR. Body light chocolate-brown, the feathers edged with paler, those of the back with rather darker centres. Feathers of anal region, flanks behind, crissum, rump, and upper tail-coverts, wing-coverts, and primary quills, edged with rose-red; secondary quills and tail-feathers with pale fulvous; little or no trace of rose on under wings. Forehead and patch on crown blackish; the hind head to nape, cheeks immediately under the eye (but not including the auriculars, except, perhaps, the most anterior) and base of lower mandible all round, ashy-gray. Throat dusky. Bill yellowish, with dusky tip. Legs dusky.

No. 41,527, near Denver City, Col., January, 1862 (Dr. C. WERNIGK). Length, 7.00; wing, 4.00; tail, 3.00; exposed portion of first primary, 3.10. Bill from forehead, .60; from nostril, .40; tarsus, .75; middle toe and claw, .80; claw alone, .24; hind toe and claw, .80; claw alone, .37.

HAB. Colorado Territory (Dr. WERNIGK); Wyoming Territory (Mr. H. R. DURKEE).

This form bears a close resemblance to *L. tephrocotis*, and may, indeed, be a variety of it; but as it differs in the characters that appear generally to be those most constant in *Leucosticte*, and as, in fifty skins of the *tephrocotis* from one locality, we have seen nothing like it, we are inclined to consider them distinct. The size and general appearance are much the same, the difference being that in *tephrocotis* the whole cheeks are chocolate below the level of the eye, the chin without any gray; while in *campestris* the sides of head below the eye, but not including the ears, with a narrow border of the chin, are of this color.

From *littoralis* this form may be distinguished by the less extent of ash on the cheeks, which in *littoralis* covers the whole ears, and extends back farther on the head all round. *L. griseinucha* is marked like *littoralis*, and is much larger than either. Possibly it may be well to entertain the idea of its being a hybrid between *tephrocotis* and *littoralis* or *griseinucha*.

The specimen described was presented to the Smithsonian Institution by Dr. Wernigk, and at the time was supposed to be *L. tephrocotis*.

Of this form, nothing as to its habits is known with certainty. It probably does not differ in any important respect from the allied races.

Leucosticte tephrocotis, var. littoralis, BAIRD.**HEPBURN'S FINCH.**

Leucosticte griseinucha, ELLIOT, Illust. Birds Am. X. *Leucosticte littoralis*, BAIRD, Tr. Ch. A. S. I, 1869, 318, pl. xxviii, f. 1. — DALL & BANNISTER, Ib. p. 282. — COOPER, Orn. Cal. I, 162.

SP. CHAR. Body chocolate-brown, the feathers narrowly margined with paler, those of the back with rather darker centres. Abdomen, flanks, crissum, rump, upper tail-coverts,

wing-coverts, and quills edged with rose-red, more or less continuous (least so on the rump); the outer edges of secondaries and tail-feathers pale fulvous, the latter with a rosy shade. Head silvery-gray; the forehead and patch on crown black; the chin gray, continuous with that of cheek; the throat dark brown, shading into the chocolate of breast. Bill yellowish, the extreme tip dusky. Nasal feathers white. Length, 7.10; wing, 4.30; tail, 3.10; exposed portion of first primary, 3.40. Length of bill from forehead, .60; from nostril, .35. Tarsus, .76.

HAB. Kodiak (BISCHOFF); Sitka (BISCHOFF); Fort Simpson, British Columbia (HEPBURN); Gilmer, Wyoming (DURKEE).

This race, which we believe to be the Southern coast representative of *griseinucha*, bears much resemblance to that bird, but is considerably smaller; the colors are brighter and lighter, more like those of *tephrocotis*, and the bill is shorter and more conical, the dark patch on the head more restricted, the chin more ashy, and the brown of the head not so far forward. From *tephrocotis* it is distinguished by the extension of the ash of head below the eye; and from *campestris* by having the ear-coverts ashy, instead of the anterior portion of the cheeks only; and there is apparently a greater extent of gray on the chin.

Specimens obtained at Kodiak in February are distinguishable from specimens of *griseinucha*, obtained with them at the same place, only by their much smaller size, and lighter chocolate tints. The occurrence of both these races at the same place, at the same time, is a subject for speculation. A perfectly typical specimen (No. 59,906) is in the collection from Gilmer, Wyoming Territory, obtained by Mr. H. R. Durkee, a frequent contributor to the collections of the Smithsonian Institution, and sent by him along with numerous specimens of *L. tephrocotis*, with which it appears to have been mixed.

Leucosticte tephrocotis, var. griseinucha, BAIRD.

THE GRAY-EARED FINCH.

Passer arcticus, var. γ , PALLAS, Zool. Rosso-asiat. II (1831), 23. *Fringilla (Libinia) griseinucha*, BRANDT, Bull. Acad. St. Petersburg, Nov. 1841, 36. *Montifringilla (Leucosticte) griseinucha*, BON. & SCHL. Mon. Loxiens (1850), 35, pl. xli. *Leucosticte griseinucha*, BAIRD, Birds N. Am. 430. — KIRILLITZ, Denkwürdigkeiten (1858), I, 291. — DALL & BANNISTER, Tr. Ch. Ac. Sc. I, 1869, 282. — BAIRD, Ib. p. 317, pl. xxviii, f. 2. — ELLIOT, Illust. Am. B. pl. xi. — COOPER, Orn. Cal. I, 161. *Leucosticte griseigays*, GOULD, Voy. Sulphur.

SP. CHAR. Description of specimen No. 54,246: General color dark brownish-chocolate anteriorly, the feathers of back rather darker in the centre, and with paler edges. Forehead and crown black; rest of the head, including the cheeks and ears, of a rather silvery gray; throat blackish, shading off insensibly into the chocolate of breast. Feathers of abdomen (and hinder part of breast to a less degree), flanks and crissum, with the rump and upper tail-coverts, and lesser and middle wing-coverts, tipped with dark pomegranate or rose-red, allowing more or less of thin dusky bases to be seen, especially above, where there is an appearance of bars. Wing and tail feathers brown, nearly all, including the greater wing-coverts, edged with pale yellowish-gray with only a faint tinge of rose. Bill dusky; darkest at tip. Legs black.

Dimensions: Total length, 7.50; wing, 4.80; tail, 3.50. Exposed portion of first primary, 3.50. Bill, from forehead, .69; from nostril, .42. Legs: tarsus, .95; middle toe and claw, .92; claw alone, .35; hind toe and claw, .69; claw alone, .38.

HAB. Aleutian Islands (St. George's and Unalashka).

This is considerably the largest of the American species of *Leucosticte*, and has a longer bill. It also has the chocolate and rose color darker, and the rose extending farther forward on the breast than in other species. It could only be confounded with *C. littoralis* as to color, both having the head above, and on the sides, ashy, covering the whole ear-coverts; but the dusky patch on the crown is more extended, the ash of chin more restricted, and the throat darker. The rose extends farther along the breast, and the tints are different. The size is much larger.

A specimen, apparently young, perhaps a female, differs in duller tints, and a tinge of ochreous-yellow on the middle of the abdomen and crissum. The lining of the wings is without any rose-color.

Bonaparte and Schlegel describe the young of this species as without rose-color.

Specimens of this bird were obtained at St. George's Island, with the eggs (which are white), by Mr. W. H. Dall. Dr. Minor found it at Unalashka.

HABITS. The Gray-eared Finch is the largest species of this remarkable genus known to inhabit North America. Thus far, except in one instance, it has been met with only in the Aleutian Islands and Unalashka. In the latter place they were met with by Dr. T. T. Minor, and in the former by Mr. Dall.

Mr. R. Brown (Ibis, 1868, p. 432) states that a single specimen of this very rare bird was taken at Fort Rupert, Vancouver Island, in June, 1862, by Mr. P. M. Compton, the officer in charge of that station. This, however, may have belonged to the var. *littoralis*.

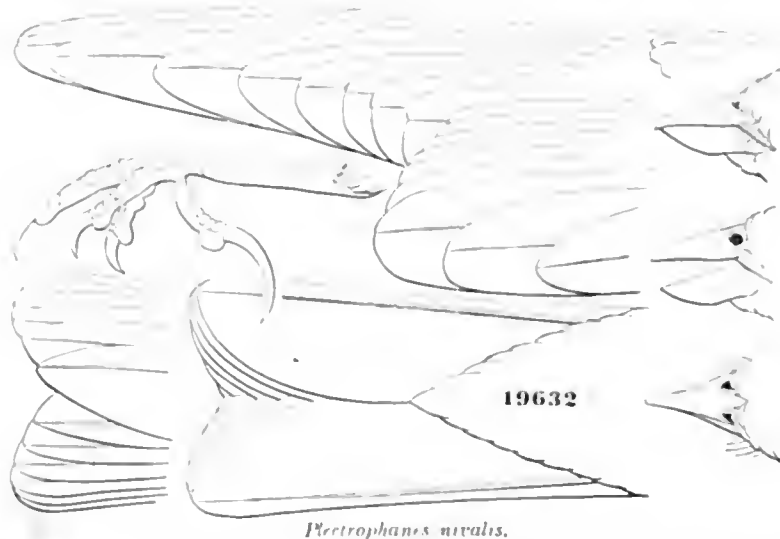
Mr. Dall states that they abound on the Pribylow and the other Aleutian Islands. A number of specimens were obtained on the St. George's in August, though at that time they were moulting. At that season this bird had no song except a clear chirp, sounding like *wéet-a wéet-a-wée-weet*. It was on the wing a great part of the time, rarely alighting on the ground, but darting rapidly in a series of descending and ascending curves. At one time it would swing on the broad top of an umbelliferous plant, and at another alight on some ledge of the perpendicular bluff, jumping from point to point, as if delighting to test its own agility. Mr. Dall adds that its nest is a simple hollow on one of the ledges, provided with a few straws or a bit of moss. They deposit their eggs in May, and these are four in number. In August their young were fully fledged.

They feed on the seeds of grasses and other small plants, but in the crop of one Mr. Dall found two or three small beetles. They were also received from Kodiak, through Mr. Bischoff.

Their eggs are of a grayish-white, with a slight tinge of yellowish, and measure .95 by .70 of an inch.

GENUS **PLECTROPHANES**, MEYER.*Plectrophanes*, MEYER, "Taschenbuch, 1810." Agassiz. (Type, *Emberiza nivalis*.)*Centrophanes*, KAFF, "Entw. Gesch. Europ. Thierwelt, 1829." Agassiz. (Type, *E. lapponica*.)

GEN. CHAR. Bill variable; conical; the lower mandible higher than the upper; the sides of both mandibles (in the typical species) guarded by a closely applied brush of stiffened bristly feathers directed forwards, and in the upper jaw concealing the nostrils;

*Plectrophanes nivalis*.

the outlines of the bill nearly straight, or slightly curved; the lower jaw considerably broader at the base than the upper, and wider than the gonys is long. Tarsi considerably longer than the middle toe; the lateral toes nearly equal (the inner claw largest), and reaching to the base of the middle claw. The hinder claw very long, moderately curved and acute, considerably longer than its toe; the toe and claw together reaching to the middle of the middle claw, or beyond its tip. Wings very long and much pointed, reaching nearly to the end of the tail; the first quill longest; the others rapidly graduated; the tertiaries a little longer than the secondaries. Tail moderate, about two thirds as long as the wings; nearly even, or slightly emarginated.

The species of this genus are essentially boreal and cosmopolitan, although

*Plectrophanes nivalis*

America possesses four species not found, like her two others, in the Old World. They are all ground-birds, collecting in large flocks, in autumn and winter, on prairies and plains, some of the species passing far to the southward. There is much variation in the color, and in the details of structure of bill and feet. In *P. nivalis* alone is the fringe of bristly

feathers along the side of the bill very distinct. The gonys also is exceptionally short, being less than half the length of the culmen.

The females are less strongly marked than the males, lacking the distinct patches of black (which, however, are nearly always faintly indicated), and other characters, and are streaked like the *Spizellinæ*.

Species and Varieties.

A. Prevailing color white.

1. *P. nivalis*. ♂. Back, scapulars, ends of tertials, alula, terminal half of primaries and the middle tail-feathers, deep black; otherwise pure white.

♀. The black replaced by grayish with black spots; crown grayish spotted with black. Young considerably tinged with ochraceous.

Hab. Circumpolar regions: south in winter into the United States.

B. Above brown, spotted with black. ♂. Crown black.

a. Six to ten middle tail-feathers almost wholly black; the rest without black ends. ♂ with a nuchal collar of rufous or buff, and without rufous on the wings.

2. *P. lapponicus*. ♂. Head, all round, and jugulum, deep black; a post-ocular stripe, running downward behind the black jugular patch, and entire lower parts from the jugulum, white. Nuchal collar chestnut-rufous. ♀ with the black areas merely indicated by a dusky clouding, and merely a tinge of rufous round the nape. *Hab.* Circumpolar regions; south in winter into the United States.

3. *P. pictus*. ♂. Head above and laterally deep black, bordered anteriorly and below with white; a post-ocular stripe, and an ovate auricular spot of the same. Nuchal collar and entire lower surface bright buff. ♀. Pale grayish-buff, darker above; above distinctly, and on the jugulum obsoletely, streaked with black. *Hab.* Interior plains of North America, north to Arctic Ocean.

4. *P. ornatus*. ♂. Head above, and whole breast and abdomen, black; a superciliary stripe, side of head, chin, throat, anal region and crissum, white; nuchal collar rufous. ♀ hardly distinguishable from that of *P. pictus*.

a. Lesser wing-coverts brownish-gray; black feathers of breast, etc., without rufous edges. *Hab.* Interior plains of United States.

var. *ornatus*.

b. Lesser wing-coverts black; black feathers of breast, etc., with rufous edges. *Hab.* Southern plains of North America, and table-land of Mexico.

var. *melanomus*.

b. Only two middle tail-feathers almost wholly black; the rest with black ends. ♂ without a nuchal collar of rufous or buff, and with rufous on the wings.

5. *P. maccowni*. ♂. Crown, and a broad crescent on the jugulum, black; rest of head and neck ashy, approaching white on the throat and over the eye; beneath white, above grayish-brown, streaked with black; middle wing-coverts rufous. ♀. Above yellowish-umber, beneath yellowish-white; thickly streaked above, unstreaked beneath. No rufous on wings, and no black on head or jugulum. *Hab.* Plains, from Texas, northward.

There seems to be no special reason for subdividing this genus, although this has been done, — *P. nivalis* being alone retained in *Plectrophanes*; *P. maccowni* forming the type and sole member of the genus *Rhyncophanes*

(Baird, 1858), and the rest coming under *Centrophanes* (Kaup). The characters upon which these are based are very trivial, being mainly the varying degree of size of the bill and length of the hind claw. In this latter respect there is too much individual variation in the same species to admit of this being available as a specific, much less as a subgeneric character, while the size of the bill is not of more than specific importance.

Plectrophanes nivalis, MEYER.

SNOW-BUNTING.

Emberiza nivalis, LINN. Syst. Nat. 1, 1766, 308 (not *Fringilla nivalis*, L.). — FORSTER, Phila. Trans. LXII, 1772, 403. — WILSON, Am. Orn. III, 1811, 86, pl. xxi. — AUD. Orn. Biog. II, 1834, 575; V, 1839, 496, pl. 189. *Emberiza (Plectrophanes) nivalis*, BON. Obs. 1825, No. 89. "*Plectrophanes nivalis*, MEYER." — BON. List, 1838. — AUD. Syn. 1839, 103. — IB. Birds Am. III, 1841, 55, pl. 155. — MAX. Cab. J. VI, 1858, 345 (Spitzbergen). — BAIRD, Birds N. Am. 1858, 432. — NEWTON, Ibis, 1865, 502. — DALL & BANNISTER, Tr. Ch. A. S. I, 1869, 282 (Alaska). — COOPER, Orn. Cal. I, 177. — SAMUELS, 296. *Emberiza montana*, GMELIN, Syst. I, 1788, 867, 25. *Emberiza mustelina*, GMELIN, Syst. I, 1788, 867, 7. *Emberiza glacialis*, LATHAM, Ind. Orn. I, 1790, 398.

SP. CHAR. *Male*. Colors, in spring plumage, entirely black and white. Middle of back between scapulars, terminal half of primaries and tertiaries, and two innermost tail-feathers, black; elsewhere pure white. Legs black at all seasons. In winter dress white beneath; the head and rump yellowish-brown, as also some blotches on the side of the breast; middle of back brown, streaked with black; white on wings and tail much more restricted. Length about 6.75; wings, 4.35; tail, 3.05; first quill longest. *Female*. Spring, continuous white beneath only; above entirely streaked, the feathers having blackish centres and whitish edges; the black streaks predominate on the back and crown. *Young*. Light gray above with obsolete dusky streaks on the back; throat and jugulum paler gray, the latter with obsolete streaks; rest of lower parts dull white. Wing-coverts, secondaries, and tail-feathers broadly edged with light ochraceous-brown.

HAB. Northern America from Atlantic to Pacific; south into the United States in winter, as far as Georgia and Southern Illinois.

Specimens from North America and Europe appear to be quite identical; there is, however, a great amount of variation among individuals.

HABITS. The common Snow Bunting is found throughout northern North America to the shores of the Arctic Sea, and in the winter months extends its migrations into the United States as indicated above.

Mr. Dall states that in Alaska, when observed, they went altogether in flocks. It was at times excessively common, and at others entirely absent. It builds its nests on the hillside, generally on the ground, under the lee of a stone. He obtained a large number of these birds at Nulato, in the winter of 1867-68. It was much more common there than the *P. lapponicus*, which was only seen in the spring, while this bird was there all the year round. Mr. Dall also met with these birds on St. George's Island, and Mr. Bischoff obtained them at Sitka. According to Mr. Bannister's observations it was altogether less abundant than the *P. lapponicus*, and seemed to prefer rather

different situations. On St. Michael's Island he never saw one of this species far from the shore, while the other species was abundant everywhere in the interior of the island. During the summer he never saw more than one or two of these birds at once, nor anywhere except on rocky points or on small rocky islands near the shore. These localities they seemed to share with the Ravens and Puffins. In the autumn they are more gregarious, but still seem to prefer the vicinity of water. Mr. Bannister also observed this bird at Unalaklik, where it is common.

Wilson was of the opinion that these birds derive a considerable part of their food from the seeds of certain aquatic plants, and this he supposed one of the principal reasons why they prefer remote northern regions intersected with streams, ponds, lakes, and arms of the sea, abounding with such plants. On Seneca River, near Lake Ontario, in October, he met with a large flock feeding on the surface of the water, supported on the close tops of weeds that rose from the bottom. They were running about with great activity, and the stomachs of those he shot were filled not only with the seeds of that plant, but also with minute shell-fish that adhered to the leaves.

Richardson states that this species breeds in the most northern of our Arctic islands, and on all the shores of the continent, from Chesterfield's Inlet to Behring Strait. The most southerly of its breeding-places known to him was Southampton Island, in the 62d parallel, where Captain Lyons found a nest on the grave of an Esquimaux child. Its nest was usually made of dry grass, neatly lined with deer's hair and a few feathers, and is generally fixed in the crevice of a rock, or in a loose pile of timbers or stones. The eggs are described as of a greenish-white, with a circle of irregular umber-brown spots round the larger end, with numerous blotches of subdued lavender-purple. July 22, in removing some drift timber on a beach at Cape Parry, he discovered a nest on the ground, containing four young Snowbirds. Care was taken not to injure them, and while they were seated at breakfast, at a distance of only two or three feet, the parent birds made frequent visits to their offspring, each time bringing grubs in their bills. The Snowbirds are in no apparent haste to leave for the South on the approach of winter, but linger about the forts and open places, picking up seeds, until the snow becomes too deep. It is not until December or January that they retire to the south of the Saskatchewan. It returns to that river about the middle of February, by April it has reached the 65th parallel, and by the beginning of May it is found on the shores of the Polar Sea. At this period it feeds on the buds of the *Saxifraga oppositifolia*, one of the earliest of the Arctic plants. The young are fed with insects.

The Snow Bunting is also an inhabitant, during the breeding-season, of the Arctic regions of Europe and Asia, and the islands of the Arctic Sea. Scoresby states that it resorts in large flocks to the shores of Spitzbergen, and Captain Sabine includes it among the birds of Greenland and the North Georgian Islands, where it is among the earliest arrivals. Mr. Proctor, who

visited Iceland in 1837, found the Snowbird breeding there in June. He found their nests placed among large stones or in the fissures of rocks, composed of dry grass lined with hair and feathers. The eggs were from four to six in number. The male attends the female during incubation. Mr. Proctor states that he has seen this bird, when coming from the nest, rise up in the air and sing sweetly, with its wings and tail spread in the manner of the Tree Pipit. Linnæus, in his Tour in Lapland, mentions seeing these birds in that country about the end of May, and also in July. He also mentions that this bird is the only living thing that has been seen two thousand feet above the line of perpetual snow in the Lapland Alps. This bird also breeds on the Faroe Islands. Mr. Hewitson found its nest in Norway. It contained young, and was built under some loose stones. Young birds have also been noticed early in August among the Grampians, in Scotland, rendering it probable that they breed in that locality, and perhaps in considerable numbers. As the severity of winter increases, they leave the heaths where they have fed upon the seeds of grasses, and descend to the lowlands, frequenting the oat-stubbles, and, when the snow is deep, approaching the coast. Their call-note is pleasing, and is often repeated during their flight, which they make in a very compact body. Before settling on the ground they make sudden wheels, coming almost into collision with each other, uttering at the same time a peculiar guttural note. They run on the ground with all the ease of Larks, and rarely perch. Temminck states that they are very abundant in winter along the sea-coast of Holland.

Their appearance in Massachusetts is usually with the first heavy falls of snow, in December and January. They are most abundant in the open places near the sea-coast, and formerly were very numerous in the marshes between Boston and Brookline. A wounded male in full adult plumage was taken by me, in 1838, and kept some time in confinement. It would not accustom itself to a cage, and a large box was prepared in which it could run more at large. It fed readily on grain and cracked corn, delighted to bathe itself several times in the day, but would not be reconciled to my near presence. On my approach it would rush about its prison, uttering its peculiar call-notes, blending with them a loud guttural cry of alarm. As the spring approached, it warbled occasionally a few notes, but uttered from time to time such mournful cries, as if bewailing its captivity, that it would have been released, had its crippled condition permitted it to take care of itself. It was given in charge of a friend, but did not live through the heat of the ensuing summer.

It is stated that a nest of this bird was found among the White Mountains by Mr. Kirk Boott, of Boston, in the summer of 1834. It contained young birds. This, if the identification was correct, was probably an accidental occurrence. None have been noticed there since, nor have I ever been able to find any of the permanent residents among the mountains that have met with these birds in that region, except in winter.

The only authenticated nest and eggs (10,433) in the Smithsonian collection were received from Mr. R. MacFarlane, with the parent, taken on the Arctic coast east of Fort Anderson, and having on the label, "Nest situated in a cave in a sand-bank." The nest is deeply saucer-shaped, and composed of wiry grass-stems, with a few feathers in the lining; external diameter 3.75 inches, internal about 3.00; depth, 2.50 externally and 1.50 internally. The eggs, five in number, are of a dull white, with perhaps a faint bluish cast, sprinkled and spattered with dilute yellowish-rufous, the markings most numerous toward the larger end; they measure .95 of an inch in length by .64 in breadth.

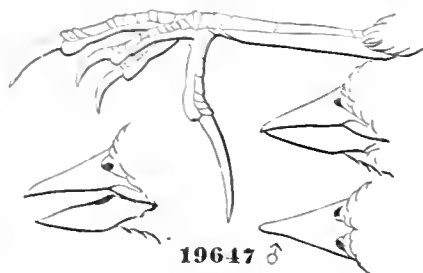
Plectrophanes lapponicus, SELBY.

LAPLAND LONGSPUR.

"*Fringilla lapponica*, LINN. Fauna Suecica, 1761, sp. 235."—IB. Syst. Nat. I, 1766, 317. FORSTER, Phil. Trans. LXII, 1772, 404. *Emberiza (Plectrophanes) lapponica*, SW. F. B. Am. II, 1831, 248, pl. xlviii. *Emberiza lapponica*, AUD. Orn. Biog. IV, 1838, 473, pl. 365. *Plectrophanes lapponicus*, "SELBY," BON. List, 1838. — AUD. Syn. 1839, 98. — IB. Birds Am. III, 1841, 50, pl. 152. — BAIRD, Birds N. Am. 1858, 433. — DALL & BANNISTER, Tr. Ch. A. S. I, 1869, 283 (Alaska). — COOPER, Orn. Cal. I, 178. — SAMUELS, 300. "*Centrophanes lapponicus*, KAUP, Entw. Gesch. Europe Thierw. 1829." — CABANIS, Mus. Hein. 1851, 127. "*Fringilla calcarata*, PALL. Itin. 710, sp. 20," French ed. III, 1793, 464, pl. i. *Centrophanes calcaratus*, GRAY, List Gen. 1841, App. 1842, 11.

SP. CHAR. *Male*. Head all round, and neck black, extending on the jugulum in a crescentic patch; a broad line from above and behind the eye, sides of neck, a patch in the black of hind head, and whole under parts, white; the sides of body streaked broadly with black. A broad half-collar of chestnut on back of neck, separated from the hood narrowly, and from the auriculars and throat broadly, by the white stripe from the eye. Above brownish-black, the feathers sharply edged with brownish-yellow. Outer tail-feathers white, except the basal portion of inner web, and a shaft streak at end; next feather with a white streak in end, rest black. Legs black; bill yellow, tipped with black. In winter plumage the black and other markings overlaid by rusty and fulvous; beneath by whitish. *Female* with the black feathers of head edged with yellowish-rusty; the throat white, bordered on the sides and behind by blackish; feathers edged with grayish-white, the rufous of nape obscure, and streaked with blackish. Length of male, 6.25; wing, 3.90; tail, 2.80.

HAB. Northern portions of the Old and the New World; breeding in arctic and subarctic regions, and in winter descending southward, as far at least as New York, Southern Illinois, and Fort Garland, New Mexico.



Autumnal specimens, of both sexes, differ in having the pattern of coloration obscured by ochraceous borders to the feathers, and a general rusty cast to the plumage.

There appears to be no difference between North American and European specimens of this bird.

HABITS. The Lapland Longspur is an Arctic resident, belonging equally to the two continents, rarely descending even in winter to temperate regions, and then chiefly in its immature plumage. In Europe, according to Yarrell, only a few specimens have been found in the British Islands, and these were single individuals, mostly found in company with Larks. They have also been taken in France, in Belgium, and in different parts of Germany. Degland states that these birds are occasionally snared on the coast at Dunkirk, and in the neighborhood of Antwerp, but these are always young males in their winter plumage.

Pennant states that it is found in Siberia, and near the Ural Mountains, migrating in the winter as far south as Switzerland; and, according to Necker, they have also been taken, always in company with Larks, in the vicinity of Geneva. It inhabits Norway, Sweden, the Faroe Islands, Spitzbergen, Iceland, and Greenland, in the summer.

Richardson mentions that the Lapland Bunting is common in the fur regions, wintering on the coast of Hudson's Bay. During its stay it feeds on grass-seed, the fruit of the juniper, and the pines. As he never met with these birds during the winter, he suspects that their principal retreats are on the borders of Lakes Huron and Superior, and the country westward. In 1827 they appeared on the plains, at the Carlton House, about the middle of May, in very large flocks, in company with Shore Larks and the *P. picta*, frequenting the open spots where the fires had destroyed the grass. In the same season they came a few days later to the Cumberland House, and kept constantly about the furrows of the new-ploughed fields. The year before they had been, in smaller flocks, in the vicinity of Fort Franklin, latitude 65°, in the beginning of May. Their crops were found filled with seeds of the alpine arbutus.

Mr. Audubon met with them in enormous flocks in Kentucky, about February 15, 1819. They were in company with the Shore Larks and the Snow Buntings. None of these were in perfect plumage.

Mr. Ridgway cites this as a common winter visitant in Southern Illinois, abundant in unusually severe winters, either in large flocks by itself, or a few individuals mixed up in flocks of Shore Larks.

Mr. Dall gives May 12 as the date of the first arrival of these birds at Nulato, and adds that it is not at any time a very common bird. He was not able to find its nest at Nulato, but was informed by the Indians that it builds on the bare hillsides, in hillocks of grass, and that it does not leave the nest when any one approaches, but sits perfectly still, and thus often escapes detection. He considers it a very fine singer. Specimens were received from Sitka, obtained by Bischoff. To this account Mr. Bannister adds that it is by far the most abundant of the land-birds found at St. Michael's. It appeared on that island about the 6th of May, and from that time until about the middle or latter part of September they were observed in great numbers all over the island. He, too, was not successful in finding its nest, though

the birds were started up by hundreds on every walk over the island. From this he infers that they must be very carefully concealed. He often searched for them, but always with the same result. Mr. Bannister regarded this species as decidedly the best songster of its family.

In the far North it is an extremely abundant species from one ocean to the other, in the winter moving farther south, to the United States, in large flocks. It has not been found in California, but in the central and eastern regions has been obtained as far south as Leavenworth, Kan., Racine, Wis., Boston, and New York. It is stated by different observers, that, like the Lark, it sings only while in motion in the air, or while suspended, and that its notes are agreeable and melodious.

According to Richardson, they breed in moist meadows on the shores of the Arctic Sea, the nest being placed in a small hillock, among moss and stones. It is composed externally of dry stems of grass, interwoven to a considerable thickness, and lined very neatly and compactly with deer's hair. The eggs, seven in number, he describes as pale ochre-yellow, spotted with brown. Sir James Ross found them by no means numerous in the higher northern latitudes, and obtained one nest, containing five eggs, in July.

According to Holböll, this bird is common along the shores of both North and South Greenland. They reach Godthaab in the beginning of May, and Godhaven a month later. Their migrations do not take place all at once, but they are constantly arriving during the month. It remains in South Greenland until the beginning of September, and longer if the deep snows do not drive it away. This bird is never met on shipboard until the vessels are in Davis Strait, proving that their migrations must be from America. The Greenlanders call it Narksumatak (inhabitant of the plains), — an appropriate name, as it only lives on the lowlands near the sea-shore, where it builds its nest in the manner of the Lark, in the grass, or among the lichens. Its five eggs, of a dirty olive-color spotted with brown, are smaller than those of *P. nivalis*. The song of the male bird, as it hovers in the air or rocks on a swaying twig, is very clear and melodious. It is even known as the Greenland Nightingale. Its food is seeds, and it is not known to seek insect-larvæ on the houses of the Greenlanders, as does the *P. nivalis*. In their winter dress they all resemble the female in her summer plumage, only in the male some black is seen in the head-feathers.

Fabricius describes its eggs as five or six in number, of a reddish-gray with brownish spots. Degland describes their ground-color as an ashy-gray, covered with spots of light brown, with lines and spots of deep brown, and also of clear black.

Eggs from Anderson River exhibit great variations in their appearance, more from the difference in the distribution of their spots than from variations in colors. Where distinctly visible, the ground-color appears to be of yellowish-gray, frequently so thickly spotted as not to be recognizable. The blotches are of various shades of brown, with shadings of olive, purple, or

red, and at times almost black. In some, fine olive-brown dots cover the egg so completely as to make it appear as of one uniform deep color. In others the brown is lighter and more of a reddish hue, and again in others the markings are in irregular distribution, and of different shades. They measure .80 by .60 of an inch.

Nest with eggs (7414), collected on Anderson River, Franklin Bay, June 27, by R. MacFarlane, was built on the ground, and is deeply saucer-shaped, measuring 3.75 in external and 2.30 in internal diameter; the depth 2.75 exteriorly and 1.50 interiorly. It is composed of coarse wiry grass-stems, and softly lined with feathers of *Lagopus*. The eggs, five in number, have the ground-color light umber-drab, this faintly blotched with deeper livid slate, and with a few straggly black lines, much as in certain *Icterida* and in *Chondestes*. They measure .86 of an inch in length by .63 in breadth.

Plectrophanes pictus, SWAINSON.

SMITH'S BUNTING; PAINTED LONGSPUR.

Emberiza (*Plectrophanes*) *picta*, Sw. F. B. Am. II, 1831, 250, pl. 49 (spring). — NUTT. Man. II, 589. *Plectrophanes pictus*, AUD. Syn. 1839, 99. — Id. Birds Am. III, 1841, 52, pl. cliii (Richardson's specimen). — BAIRD, Birds N. Am. 1858, 434. — DALL & BANNISTER, Tr. Ch. A. S. I, 1869, 283 (Alaska). *Emberiza picta*, AUD. Orn. Biog. V, 1839, 91, pl. cccc. *Centrophanes pictus*, CAR. Mus. Hein. 1851, 127. *Plectrophanes smithi*, AUD. Birds Am. VII, 1844, 337, pl. cccclxxxvii (winter).

SP. CHAR. *Male*. Spring. Top and sides of head black. A line from bill over the eye, lores, lower and posterior border of the black cheeks, ears (encircled by black), and a small patch in the nape, white. Entire under parts, and extending round neck to nape (where it bounds abruptly the black of head), buff or light cinnamon-yellow; the under tail-covert paler; the inside of wings, white. Feathers of upper surfaces black, edged with yellowish-gray; shoulders or lesser coverts and the greater black; middle white, forming a conspicuous patch. Quills edged externally with white, this involving the whole outer web of outermost primary. Whole of outer and most of second tail-feather white. Bill dusky; lower mandible and legs yellowish. Length, 5.50; wing, 3.50; tail, 2.75; bill, .45.

Female. The markings of male faintly indicated, but the black and buff wanting. Head above brown, streaked centrally with paler. A narrow dark line on each side the throat, and brownish streaks across the jugulum, and along sides of body. Traces visible of the white marks of the head. Bill and feet as in the male.

HAB. Prairies of Illinois and Missouri Plains, in winter; in summer north to the Arctic Ocean.

This species is quite similar in form to *P. lapponicus*, although with slenderer bill, and perhaps longer hind claw. While the colors of adult males are very different, the females have a decided resemblance; they may, however, be distinguished in all stages by the black or dusky legs of *lapponicus* and the yellow of *pictus*, and perhaps by the more dusky upper mandible of the latter.

HABITS. This species was first obtained by Sir John Richardson's party, and described by Swainson in the *Fauna Boreali-Americana*. It was observed associating with the Lapland Buntings on the banks of the Saskatchewan, but no information was obtained in regard to its breeding-habits. No specimens in the mature plumage are known to have been obtained in the United States, but birds in the immature plumage are not unfrequent, in early spring, throughout Illinois. Mr. Audubon, in company with Mr. Harris and Mr. Bell, obtained specimens of these birds near Edwardsville, and described them as a new species. Mr. Bell states, in regard to these birds, that he found them very abundant on the low prairie near a lake, a few miles from Edwardsville. They were generally in large flocks, and when once on the ground they began to separate. They ran very nimbly, in a manner resembling that of the Grass Finch, and when they arose, which they rarely did unless they were nearly approached, they uttered a sharp click, repeated several times in quick succession, and moved with an easy undulating motion for a short distance and then alighted very suddenly, seeming to fall perpendicularly several feet to the ground. They preferred the spots where the grass was shortest. When in the air they flew in circles, to and fro, for a few minutes, and then alighted, keeping up a constant chirping or call, somewhat like that of the Red-Poll.

These birds were observed in large numbers at Fort Anderson, and on the Lower Anderson River, by Mr. MacFarlane, and a large number of their nests obtained. These were all on the ground, and usually in open spaces, but also in the vicinity of trees. The usual number of eggs found in a nest appears to have been four. The nests, for the most part, were constructed of fine dry grasses, carefully arranged, and lined with down, feathers, or finer materials similar to those of the outer portions. In a few there were no feathers; in others, feathers in different proportions; and in a few the down and feathers composed the chief portion of the nest, with only a few leaves as a base to the nest. They were sometimes sunk in excavations made by the birds, or placed in a tussock of grass, and, in one instance, placed in the midst of a bed of Labrador tea.

They were also obtained at Fort Yukon, at the mouth of Porcupine River, by Strachan Jones. They were much more abundant in the Mackenzie River district.

Specimens of this bird, in the fall plumage, were obtained from Fort Simpson, where Mr. B. R. Ross states that it appears on its way north in May. They resort to the fields around the fort in search of grain. Although these birds keep entirely apart from the *P. nivalis*, Mr. Ross has frequently observed several *P. lapponicus* associating with them.

When their nests are approached, the female quietly slips off, while the male bird may be seen hopping or flying from tree to tree in the neighborhood of the nest, and will at times do all he can to induce intruders to withdraw from the neighborhood.

The eggs, five in number, have a light clay-colored ground, are marked with obscure blotches of lavender and darker lines, dots, and blotches of dark purplish-brown. They measure .80 by .65 of an inch.

Plectrophanes ornatus, Towns.

CHESTNUT-COLLARED BUNTING; BLACK-BELLIED LONGSPUR.

Plectrophanes ornatus, TOWNSEND, J. Ac. Nat. Sc. VII, 1837, 189. — *Ib.* Narrative, 1839, 344. — *ARD.* Syn. 1839, 99. — *Ib.* Birds Am. III, 1841, 53, pl. cliv. — *NUTT.* Man. I, (2d ed.,) 1840, 537. — *BAIRD*, Birds N. Am. 1858, 435. — *Eubleriza ornata*, *ARD.* Orn. Biog. V, 1839, 44, pl. ccxciv, f. 1. — *Centrophanes ornatus*, *CABANIS*, Mus. Hein. 1851, 127.

SP. CHAR. Bill dark plumbeous. *Male.* Crown, a narrow crescent on the side of the head, with a line running into it from behind the eye, entire breast and upper part of belly all round, black; throat and sides of the head, lower part of belly and under tail-coverts, with bases of the tail-feathers, white. The white on the tail-feathers runs forward as an acute point. A chestnut band on the back of the neck extending round on the sides. Rest of upper parts grayish-brown, streaked with darker. Middle coverts with a white patch. Lesser wing-coverts like the back. Legs dusky, bill blue, darker at tip. Length about 5.25 inches; wing, 3.20; tail, 2.30; tarsus, .75.

Female lacking the black and chestnut colors; the black of the breast indicated by dusky streaks and a line of streaks each side of the throat.

HAB. Plains of the Upper Missouri. San Antonio, Texas, spring (*DRESSER*, *Ibis*, 1865, 486).

HABITS. This species was first discovered by Mr. Townsend, who procured a single specimen, a male, on the Upper Missouri River. He describes it as by no means a common bird, keeping in pairs and living exclusively on the ground. It was remarkably shy, and Mr. Townsend was not able to procure more than a single specimen.

Mr. Nuttall states that he met with this bird early in May, on the wide grassy plains of the Platte. The birds were already paired for the season. He heard them utter no notes other than a chirp, as they kept busily foraging for their subsistence.

Mr. J. A. Allen (*American Naturalist*, May, 1872) speaks of this bird and the Lark Bunting as by far the most interesting species seen by him in Western Kansas. They were not only characteristic of the region, but were also among the few birds strictly confined to the arid plains. They were quite abundant, but were only met with on the high ridges and dry plateaus, where they seemed to live somewhat in colonies. At a few localities they were always numerous, but elsewhere would be frequently not met with in a whole day's drive. They were very wary and tenacious of life, often flying a long distance after having been shot through vital parts. Most of the specimens had to be killed on the wing, at a long range. They are strong fliers, and seem to delight in flying in the strongest gales, when all the other birds appear to move with difficulty, and to keep themselves concealed among the grass. This bird sings while on the wing.

Mr. H. E. Dresser, in his paper on the birds of Southern Texas, mentions finding the Chestnut-collared Bunting in flocks early in the spring, on the prairies near San Antonio, but it was not a common bird there.

Dr. Woodhouse found this species quite rare in the Indian Territory, where he was only able to secure a single specimen.

Captain Blakiston met with this species on the Saskatchewan Plains on the 15th of May, 1858, — a higher range than has been noticed by any one else.

Dr. Heermann, while on a trip to the Rocky Mountains in 1843, met with this species in small flocks and pairs, scattered over the prairies of the Platte River, and was so fortunate as to meet with one of its nests. It was built on the ground, and was made of an interweaving of fine grasses and lined with hair. He describes the eggs, which were four in number, as having a white ground, with black lines at the larger end, and a few faint blotches of a neutral tint scattered over their whole surface.

This description does not quite correspond with the eggs collected by Mr. Audubon on the Upper Missouri. These have a clay-colored ground with the slightest possible tinge of green, and are marked with fine dots of purplish-brown, and larger markings, blotches, and short lines of dark brown. They measure .70 by .55 of an inch, and have a strong resemblance to the eggs of both *P. pictus* and *P. macconni*.

Five eggs of this species, obtained at Fort Hays, Kansas, June 1, 1871, by Mr. J. A. Allen, measure .75 of an inch in length by .58 in breadth. They are small in proportion to the bird, and are somewhat pointed at one end. Their ground is a gray or grayish-white shade of stone-color, and this is somewhat sparingly marked with blotches of dark brown, almost black, and lighter markings of purplish-brown. The nest was placed on the ground, and was composed altogether of fine stems of grasses.

***Plectrophanes ornatus*, var. *melanomus*, BAIRD.**

BLACK-SHOULDERED LONGSPUR.

Plectrophanes melanomus, BAIRD, Birds N. Am. 1858, 436, pl. lxxiv, f. 2. — HEERMANN, X, c, 13.

SP. CHAR. Bill yellowish, dark brown along the culmen. *Male*. Crown, a short stripe behind the eye, and a short crescent behind the ear-coverts, entire breast as far back as the thighs, and the lesser wing-coverts, black. The black on the breast margined with dark cinnamon. Sides of head, chin, throat, and region behind the black of the belly, white. A broad half-collar of dark cinnamon-brown on the back of the neck. Tail-feathers mostly white; the innermost tipped with dark brown; the white ending in an acute angle. Length, 5.30; wing, 3.40; tail, 2.60. (No. 6,290.)

HAB. Eastern slope of the Rocky Mountains, Mexico, on the table-lands, north to Upper Missouri. Orizaba (SCLATER, 1860, 251); San Antonio, Texas, spring (DRESSER, Ibis, 1865, 486); Fort Whipple, Arizona (COUES, P. A. N. S. 1866, 84); Vera Cruz, plateau, breeding (SUNICHRIST, I, 551).

As already stated, this bird is very similar to *P. ornatus*. It appears to be a very little larger, or, at any rate, with considerably longer wings. The bill, however, is shorter and stouter; the hind claw decidedly longer. The chestnut of the back of the neck is darker. The white on the outer web of the tertiaries and secondaries is much purer and wider. The rufous margins of the pectoral feathers we have never seen in *P. ornatus*. The most striking peculiarity, however, is in having the shoulders black, instead of brown like the rest of the wing-feathers, edged with paler. Both have the white posterior row of lesser wing-coverts.

An immature male (6,291) has the black of the head mixed with brown, and a maxillary series of spots on each side of the throat. A female has a similar series of spots; the under parts generally being brownish-white, the shafts across the breast and along the sides streaked with brown, the concealed portions of the feathers light brown, fading out to the whitish exterior. There is no black on the shoulder, nor chestnut on the nape.

Fully mature specimens of this bird and of *ornatus* are so rare in collections as to render it difficult to decide positively as to their true relationship. It is by no means impossible that they merely represent different conditions of plumage of one species, but for the present, at least, we prefer to consider them as distinct. The *P. melanomus* is resident on the table-lands of Mexico.

HABITS. Of the habits and general history of this species, very little is known. Its close resemblance to *P. ornatus* is suggestive of its probably equally close similarity in nesting, eggs, and manner of feeding. Specimens have been received from Mexico, from Fort Thorn, from New Mexico, Pole Creek, and the Black Hills. From the last-named places they were obtained in August and September.

Dr. Heermann, in his Report on the birds observed in Lieutenant Parke's route near the 32d parallel, mentions having met with these birds, which he calls the Black-shouldered Longspur, at a large prairie-dog village some miles west of Puerto del Dado. They were in flocks, and were associated with *P. macrourus*. From that point to the Rio Grande he found both of these species abundant wherever they struck isolated water-holes, these being the only places for miles around where drink can be procured. When shot at, they rise as if to go away, but are forced to return, after describing a few curves, to the only spot where they can procure their necessary drink. They may thus be killed in great numbers. Dr. Heermann states that he has seen from a hundred to a hundred and fifty thus brought down in four or five discharges of a gun.

Mr. Dresser states that on the 4th of April a small flock of what was at first supposed to be the *P. ornatus* was noticed near the town of San Antonio. They were pursued, and found on the banks of the San Pedro. They were not very shy, and specimens were procured which proved to be of this species. This is the only time that they have been observed in

that part of the country, though they may have been mistaken for other species.

Dr. Cones mentions the taking of a single specimen of this species, October 17, on the open grassy plains of Arizona.

This species is also given by Mr. Sumichrast as a resident throughout the year of the great plains of the plateau of Mexico. From them it occasionally descends to the distant intervals, as far as Orizaba, or at the elevation, above the gulf-level, of 1,220 metres.

***Plectrophanes maccowni*, LAWRENCE.**

CHESTNUT-SHOULDERED LONGSPUR; MACCOWN'S BUNTING.

Plectrophanes maccowni, LAWRENCE, Ann. N. Y. Lyc. V, Sept. 1851, 122. Western Texas.
— CASSIN, Illust. I, viii, 1855, 228, pl. xxxix. — HEERM. X, c, p. 13. — BAIRD, Birds N. Am. 1858, 437.

SP. CHAR. *Male in spring.* Top of head, a broad stripe each side the throat from lower mandible, and a broad crescent on jugulum, black; side of head including lores and band above the eye, throat, and under parts, ashy-white; ear-coverts bordered above and behind by blackish, running out at the maxillary stripe. Breast just behind the black crescent and sides, showing dark bases of feathers. Upper parts ashy, tinged with yellowish on the mandible, and streaked with dusky; least so on nape and rump. Lesser wing-coverts ashy; median chestnut-brown, with blackish bases sometimes evident; the quills all bordered broadly externally with whitish, becoming more ashy on secondaries. Tail-feathers white except at the concealed bases and the ends, which have a transverse (not oblique) tip of blackish; the outermost white to the end; the two central like the back. Bill dark plumbeous; legs blackish. In winter the markings more or less obscured; the bill and legs more yellowish.

Female lacks the black markings, which, however, are indicated obsoletely as in other *Plectrophanes*; there is no trace of chestnut on the wings, no streaks on the breast. Length, 5.50; wing, 3.60; tail, 2.50; bill, .46.

HAB. Eastern slopes of Rocky Mountains, from Texas to Upper Missouri.

This species varies considerably in markings, but is readily recognized among other *Plectrophanes* in all stages by short hind toe, very stout bill, and the transverse dark bar at the end of all tail-feathers except the inner and outer.

HABITS. Maccown's Lark Bunting is yet another of the various species of our birds whose history is very little known, and in regard to which the most we are able to state, at present, is that they appear in different parts of the interior plains of the United States, between the Rocky Mountains and the Missouri River and the lower tributaries of the Mississippi, extending from New Mexico and Texas northward, during the breeding-



season, to the northern boundary of the United States. It was first discovered by Captain Maccown, who obtained it in Texas, where he found it in company with a flock of Shore Larks, and where it winters in considerable numbers. Mr. Dresser afterward met with it in small flocks, early in April, on the prairies near San Antonio. It was not very common, and he was only able to obtain two specimens during his stay in that section.

Dr. Heermann found this species congregated in large flocks, in company with the Black-shouldered Bunting. They were engaged in gleanings the seeds from the scanty grass, on the vast arid plains of New Mexico. Insects and berries formed also a part of their food; in search of these they showed great activity, running about with celerity and ease. In the spring, large flocks were seen at Fort Thorn, having migrated thither from the North the previous fall. With the return of mild weather they again departed for the North for the purposes of incubation. Among these large flocks Dr. Heermann noticed also the Shore Lark, but they formed only a small proportion of the whole number.

In a letter to Mr. Cassin, Dr. Heermann states that he found this species congregated with large numbers of other birds about the isolated water-holes in the barren plains of New Mexico.

Mr. J. A. Allen states (*Am. Nat.*, May, 1872) that, during a few weeks' stay near Fort Hays in midwinter, he found Maccown's Longspur tolerably frequent in that vicinity.

An egg of this species, in the collection of the late Dr. Henry Bryant, measures .80 by .60 of an inch. Its ground-color is a light bluish clay-color, marbled, dotted, blotched, and lined with light neutral tints of lavender and darker markings of purplish and reddish brown. The nest was placed on the ground, and is composed entirely of coarse grass-stems (No. 3,521, J. Pearsall, Fort Benton).

SUBFAMILY PYRGITINÆ.

The introduction into the United States, at so many distant points, of the European House Sparrow (*Pyrgita domestica*) renders it necessary to introduce it with any work treating of the birds of North America, although totally different in so many features from our own native forms. I follow Degland and Gerbe in placing the genus *Pyrgita* in a separate subfamily (*Pyrgitina*, see page 446), without any distinct idea of its true affinities, as it does not come legitimately within any of the subfamilies established for the American genera. In some respects similar to certain *Coccothraustinæ*, in the short tarsi and covered nostrils, the wings are shorter and more rounded, the sides of the bill with stiff bristles, etc. The much larger, more vaulted bill, weaker feet, and covered nostrils, distinguish it from *Spizellina*.

GENUS **PYRGITA**, CUVIER.

Pyrgita, CUVIER, R. A. 1817. (Type, *Fringilla domestica*, LINN.)

Passer, BRISSON, Orn. 1760. Same type. DEGLAND & GERBE, Orn. Europ. I, 1867, 239.

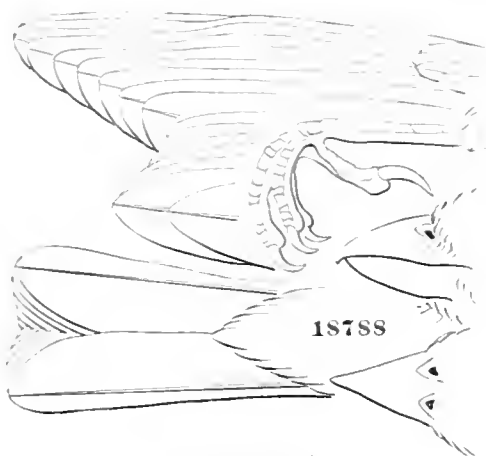
GEN. CHAR. Bill robust, swollen, without any distinct ridge; upper and under outlines curved; margins inflexed; palate vaulted, without any knob; nostrils covered by sparse, short, incumbent feathers; side of bill with stiff, appressed bristles. Tarsi short and stout, about equal to or shorter than the middle toes; claws short, stout, and considerably curved. Wings longer than tail; somewhat pointed. Tail nearly even, emarginated, and slightly rounded.

Pyrgita domestica, Cuv.

THE HOUSE SPARROW.

Fringilla domestica, LINN. Syst. Nat. 12th ed. 323, 1766. *Pyrgita domestica*, Cuv. Reg. An. 2d ed. (1829), I, 439. *Passer domesticus*, DEGLAND & GERBE, Ornith. Europ. I, 1867, 241.

SP. CHAR. *Male*. Above chestnut-brown; the interscapular feathers streaked by black on inner webs; the top of head and nape, lower back, rump, and tail-coverts plain ashy; narrow frontal line, lores, chin, throat, and jugulum black; rest of under parts grayish, nearly white along median region. A broad chestnut-brown stripe from behind eye, running into the chestnut of back; cheeks and sides of neck white; outside of closed wing, pale chestnut-brown, with a broad white band on the middle coverts, and behind showing the brown quills; the lesser coverts dark chestnut like the head stripe. Tail dark brown, edged with pale chestnut. Bill black; feet reddish. Iris brown.



Pyrgita domestica.

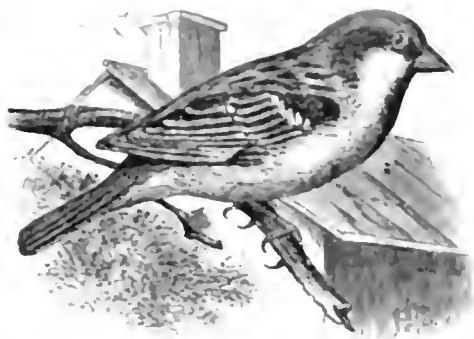
Female. Duller of color, and lacking the black of face and throat; breast and abdomen reddish-ash; cheeks ashy; a yellow-ochre band above and behind the eyes, and across the wings. Head and neck above brownish-ash; body above reddish-ash, streaked longitudinally with black.

Male in winter. The colors generally less distinct. Length, 6.00; wing, 2.85; tail, 2.50; tarsus, .70; middle toe and claw, .60.

The House Sparrow of Europe has been introduced into so many parts of the United States as to render it probable that at no distant day it will have become one of our most familiar species. Brought over to the New World within a comparatively few years, it has commenced to multiply about the larger cities, especially in the environs of New York, as also about Portland, Boston, Newark, and Philadelphia. The first effort made to naturalize it about Washington failed in consequence of the death of three hundred individuals imported by the Smithsonian Institution. A second,

however, in 1871, was more successful. One thousand birds were let loose in the public squares of Philadelphia in the spring of 1869. In and about Havana it is said to be common, as also about Great Salt Lake, where it was recently introduced by the Mormons, according to Mr. J. A. Allen.

HABITS. The common House Sparrow of Europe has, within the past few years, achieved a right to a place in the avi-fauna of North America by its complete introduction, and its reproduction in large numbers, in various parts of the country, from Portland, Me., to Washington City, as also about Salt Lake.



Passer domesticus

The first attempt to introduce these birds, within my knowledge, was made by a gentleman named Deblois, in Portland, Me., in the fall of 1858. Six birds were set at liberty in a large garden in the central part of the city. They remained in the neighborhood through the winter, and in the sheltering porch of a neighboring church they found places of shelter and security. In the following spring three nests were built in dwarf pear-trees in the garden in which they were first set at liberty. One, at least, of these nests, was successfully occupied, and six young birds were reared from it. A second nest, with four young, was also hatched by the same pair. Neither of these nests was globular in shape, but open and coarse, built of hay and straws. These nests were taken, after their use, and came into my possession. Since then I have been informed that these birds increased and multiplied, and for a while were quite abundant in that portion of the city, and a large colony of this Sparrow appeared in the winter of 1871 in Rockland, Me.

Two years later, Mr. Eugene Schieffelin, of New York, imported and set at liberty, near Madison Square, in that city, twelve of these birds, and this he repeated for several successive summers. In 1864, fourteen birds were set at liberty in Central Park, by the Commissioners. Other birds were also brought from England, by different parties, in the Cunard steamers, and released at Jersey City. These have increased very largely, and have spread to the adjoining cities, until these birds have become familiar and social residents in all the large cities and towns within an extended area around New York, as well as in all parts of that city.

They were introduced into Boston by the City Government in 1868. Two hundred birds were purchased in Germany, but unfortunately all died on their passage except about a score. These were set at liberty in June, but, weakened by their sea-voyage, several of them were found dead in the deer-park, and the rest disappeared. The following summer more were imported, but all died except ten. These were well cared for, and only released when in excellent condition. For some months nothing was seen of these

birds, and the experiment was supposed to be a failure, when it was ascertained that they had betaken themselves to the vicinity of stables in the southern part of the city, had increased and multiplied in large numbers, reappearing in the winter to the number of one hundred and fifty. They were regularly fed by the city forester each day in the deer-park, and roosted at night in the thatch of the roofs of the buildings. Since then they have very largely increased. About twenty, that same summer, were set at liberty in Monument Square, Charlestown.

In 1869 about one thousand birds were imported, by the City Government, into Philadelphia. Fortunately they came in good condition, and being released early in May immediately separated into scattered parties and prepared for themselves new homes. Some appeared in Morristown and other distant towns in New Jersey. Others wandered to Germantown, and the remoter suburbs of Philadelphia, where they found the cherry-trees in full blossom, and where their exploits in stripping the blooms from the trees gave a not very favorable first impression of these new-comers.

It has been exceedingly interesting to watch the manners and habits of these strangers in their new homes. They have become quite tame, are fearless and gentle, and as they have been very kindly treated live in a condition of semi-domestication. At first they built their nests, and passed their winters, in New York, among the thick ivies that cover the walls of so many churches, in such cases building globular nests. As soon, however, as suitable boxes were prepared for them in sufficient quantities, these were taken possession of in preference to anything else.

At the time of their introduction the shade-trees in the parks and squares of New York, Philadelphia, Brooklyn, Newark, and other places, were greatly infested with the larvæ of the measure-worms that destroyed their foliage. Since then these worms have almost entirely disappeared. A doubt has been expressed whether the Sparrows destroy these insects. That they eat them in the larvæ form I do not know, but to their destruction of the chrysalis, the moth, and the eggs, I can testify, having been eye-witness to the act.

Apprehensions have been expressed lest these new-comers may molest and drive away our own native birds. How this may be when the Sparrows become more numerous cannot now be determined, but so far they manifest no such disposition. Since their introduction into Boston the Chipping Sparrows appear to have increased, and to associate by preference with their European visitors, feeding with them unmolested. I have been unable to detect a single instance in which they have been molested, in any manner, by their larger companions. Their predatory aggressions, however, upon the rights of the common Robin have been noticed, and deserve mention. The Sparrows appear to be extravagantly fond of earthworms, but not able to hunt for them themselves. They have learned to watch the Robin as it forages for these worms, keeping around, at a respectful distance, and as soon

as one, with much toil, has dragged a worm from its place of concealment, down swoops the bird and impudently carries it off. The poor bewildered and plundered Robin essays a late and vain attempt to protect its food. The Sparrow is too nimble, and the worm is gone before its rightful owner can turn to face the robber.

The Sparrows endure the severest of the winter weather without any apparent inconvenience, appearing as cheerful, contented, and noisy with the thermometer at zero as at any other time. They are quite fearless, especially in New York, running about under the feet of the passers-by with perfect indifference and confidence. In Boston I have noticed their nests in convenient places, a few feet above crowded sidewalks. In winter they come regularly about the houses to be fed.

The House Sparrow has also been introduced into Australia, where it has become acclimated, and was, at the last accounts, rapidly increasing in that quarter. It is likewise very common about Havana, Cuba.

In the Old World this bird has a widely extended area of distribution, and is resident wherever found. It is very abundant in the British Islands and throughout the northern and central portions of Europe. In Spain and in Italy it is replaced by two closely allied species or races. This bird, however, is also found in North Africa, in the Levant, at Trebizonde, and among the mountains of Nubia. Specimens have also been received from the Himalayas, from Nepaul, and the vicinity of Calcutta.

Both in Europe and in this country the Sparrows pair early in the season. I have known them sitting on their eggs, in Boston, in March. They are very prolific, have broods of five, six, and even seven at a time, three or four times in a season. They are full of life and animation, somewhat disposed to brief and noisy quarrels, which are always harmless.

Their great attachment and devotion to their young is dwelt upon by all English writers as quite remarkable. They evince a great partiality for warmth, and even in midsummer line their nests with all the feathers they can pick up. In New York it is a favorite amusement with the children to carry with them to the public parks quantities of feathers, which they throw, one by one, to the Sparrows, to witness their amusing contests for possession.

The eggs of this bird are oval in shape, pointed at one end, with a ground of a light ashen color, blotched, dotted, and streaked with various shades of ashy and dusky brown. They measure from .85 to .95 of an inch in length, and from .60 to .65 in breadth.

SUBFAMILY **SPIZELLINÆ**. — THE SPARROWS.

CHAR. Bill variable, usually almost straight; sometimes curved. Commissure generally nearly straight, or slightly concave. Upper mandible wider than lower. Nostrils exposed. Wings moderate; the outer primaries not much rounded. Tail variable. Feet large, tarsi mostly longer than the middle toe.

The species are usually small, and of dull color, though frequently handsomely marked. Nearly all are streaked on the back and crown, often on the belly. None of the United States species have any red, blue, or orange, and the yellow, when present, is as a superciliary streak, or on the elbow edge of the wing.

In the arrangement of this subfamily, as of the others belonging to the *Fringillidæ*, we do not profess to give anything like a natural system, but merely an attempt at a convenient artificial scheme by which the determination of the genera may be facilitated.

A. Tail small and short; considerably or decidedly shorter than the wings, owing either to the elongation of the wing or the shortening of the tail. Lateral toes shorter than the middle without its claw. Species streaked above and below. (*Passerculeæ*.)

a. Thickly streaked everywhere above, on the sides, and across the breast. Wing pointed; longest primaries considerably longer than the secondaries. Tail forked.

Centronyx. Hind claw very large; rather longer than its digit. The hind toe and claw, together, as long as or longer than the middle toe and claw. Other toes as in *Passerculus*. Claws gently curved. Tertials shorter than the secondaries. Tail forked, but the lateral feathers shorter.

Passerculus. Hind claw as long as its digit; the toe equal to the middle one without its claw; lateral toes falling considerably short of the middle claw. Wings very long; first primary longest. Tertials as long as the primaries. Tail forked; feathers acute.

Poocætes. Hind claw shorter than its digit; the whole toe less than the middle toe without its claw. Lateral toes nearly equal to the middle one, without its claw. Tertials but little longer than secondaries. Tail stiffened, forked; feathers acute, outer ones white.

b. Moderately streaked above, on the sides, and on the breast, the latter sometimes unstreaked; the dorsal streaks broader, the others fainter than in the last. Wings short, reaching a little beyond the base of the tail. Not much difference between the primaries and secondaries. Tail short, graduated, and the feathers lanceolate, acute.

Coturniculus. Bill short; thick. Tertials almost equal to the primaries; truncate at the end. Claws small, weak; hinder one shorter than its digit. Outstretched feet not reaching the tip of the tail. Tail-feathers not stiffened. (In one species tail nearly equal to the wing.)

Ammodromus. Bill slender, small at base, and elongated. Tertials not longer than the secondaries; rounded at the tip. Claws large, hinder one equal to its digit. Outstretched toes reaching considerably beyond the end of the stiffened, almost scansorial tail.

B. Tail longer and broader; nearly or quite as long as, sometimes a very little longer than, the wings, which are rather lengthened. The primaries considerably longer than the secondaries. None of the species streaked beneath, and the back alone streaked above. (*Spizelleæ*.)

a. Tail rounded or slightly graduated.

Chondestes. Tail considerably graduated, not emarginated. Lateral toes considerably shorter than the middle toe, without its claw. Wings very long, decidedly longer than the tail, reaching the middle of the

tail. First quill longest. Head striped. Back streaked. White beneath. A white blotch on the end of the tail-feathers.

Zonotrichia. Tail moderately graduated. Wings moderate, about as long as the tail, reaching about over the basal fourth of the tail; first quill less than the second to fourth. Feet large. Head striped with black and white, or with brown and ochraceous. Back streaked.

Junco. Tail very nearly equal to the wings, slightly emarginate, and decidedly rounded. Outer toe rather longer than inner, reaching the middle claw. No streaks anywhere except in young; black or ash-color above; belly white; with or without a rufous back and sides. Outer tail-feathers white.

Poospiza. Tail lengthened, slightly graduated; the feathers unusually broad to the end. Bill slender. Wings about as long as the tail, reaching but little beyond its external base. Tertials broad, and, with the secondaries, rather lengthened. Second to fifth quills nearly equal, and longest. Bill dark lead-color. Tail black. Uniform ashy-brown above; white beneath. Sides of head with stripes of black and white.

b. Tail decidedly forked; a little shorter than the wing, sometimes a little longer.

Spizella. Size rather small. Wings long. Lower mandible largest. Uniform beneath, or with a pectoral spot or the chin black.

C. Tail lengthened and graduated; decidedly longer than the wings, which are very short, scarcely extending beyond the external base of the tail. Feet reaching but little beyond the middle of the tail. Species all streaked above; streaked or nearly unicolor beneath. No white on wings or tail. Outer lateral toe the longer. First quill not the shortest of the primaries. (**Melospizæ.**)

Melospiza. Culmen and commissure nearly straight. Claws stout; hinder one as large as its digit. Tail-feathers rather broad. Body streaked beneath.

Peucæa. Culmen and commissure curved. Claws weak; hinder one not much curved, decidedly shorter than its digit. Tail-feathers narrow. Without streaks beneath, excepting a narrow maxillary stripe.

D. Tail rather short, and much graduated; longer than the wings; the midrib more median. Culmen curved. Tarsus considerably longer than middle toe. Outer toe longer. But little difference in the length of the quills; the outer ones much rounded; even the second quill is shorter than any other primary except the first.

Embernagra. Color, olive-green above.

GENUS **CENTRONYX**, BAIRD.

Centronyx, BAIRD, Birds N. Am. 858, 440. (Type, *Emberiza bairdi*, AFD.)

GEN. CHAR. Bill elongated; the lower mandible smaller; outlines nearly straight. Tarsus lengthened, considerably exceeding the middle toe. Lateral toes equal, not reaching the base of the middle claw. Hind toe very large; the claw rather longer than its digit, and in its elongation resembling *Plectrophanes*, but more curved; the digit and claw together rather longer than the middle toe and claw. Wings very long, reaching beyond the middle of the tail, and beyond the end of the coverts. Tertials shorter than the primaries, and but little longer than the secondaries. Tail short, much less than from the carpal joint to end of secondaries, little more than two thirds the entire wing. It is

slightly forked, and moderately rounded laterally; the feathers all acute. Color somewhat as in *Passerculus*.

This genus differs from *Passerculus*, as stated in the description of the species farther on. It would be taken for *Plectrophanes* on account of its lengthened hind claw, which, however, is more curved than in that genus; the tarsi are much longer, the tertials less elongated, and the coloration different, though closely resembling that of the female *Plectrophanes*. But one species has thus far been recognized.

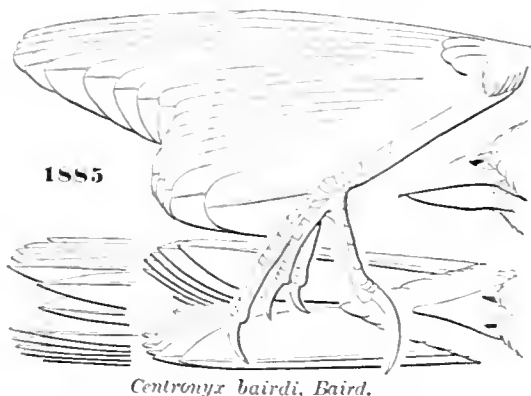
Centronyx bairdi, BAIRD.

BAIRD'S BUNTING.

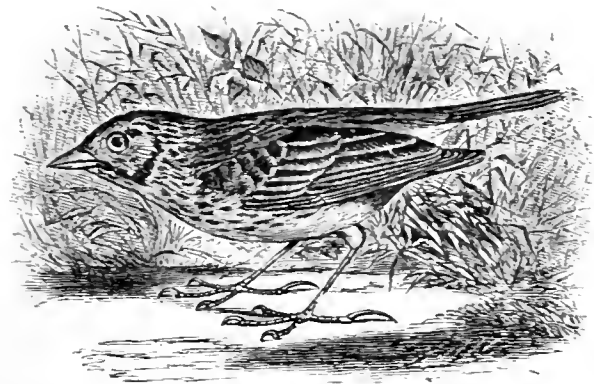
Emberiza bairdi, AUD. Birds Am. VII, 1843, 359, pl. d. *Coturniculus bairdi*, BON. Syn. 1850, 481. *Centronyx bairdi*, BAIRD, Birds N. Am. 1858, 441.

SP. CHAR. Somewhat similar in general appearance to *Passerculus savanna*. Back grayish, streaked with dusky. Crown nearly covered by black streaks, but divided by a broad median band of brownish-yellow. Eyelids and a faint superciliary stripe yellowish-white. Beneath white, with a maxillary blackish stripe and some narrow streaks on the upper part of the breast, and sides of the throat and body. Outer edges and tips of tail-feathers white; the two outer feathers obsolete white. Bend of wing white. Length, 4.75; wing, 2.80; tail, 2.20.

HAB. Mouth of the Yellowstone River. One specimen only known.



This species has somewhat of the general appearance of *Passerculus savanna*, but with important differences both of form and color. The bill is much longer, and more slender in proportion. The wings are quite unusually long; the primaries more than half an inch longer than the tertiaries; the first quill as long as the fourth, and but little less than the second and third. The tail is very short; the feathers narrow and pointed. The feet are large; the hind claw very long and considerably curved, as are the other claws generally.



Centronyx bairdi.

The species was based by Mr. Audubon on a skin brought by him from the mouth of the Yellowstone River, in 1843, in rather defective and worn plumage. This has hitherto

served as the basis of all the descriptions of the species which is justly considered one of the rarest in the North American fauna.

HABITS. In regard to the habits, distribution, or general history of this very rare species, but little is known, only one specimen having been met with. This was procured by Mr. Audubon's party to the Yellowstone River, in Dakota, on the last day of July, 1843. That it is a resident where obtained, certainly during the breeding-season, is a natural inference from the circumstances of its capture. That it may be a common bird in certain other portions of the region, immediately north of Dakota, is quite probable. Its close habits, as described by Mr. Audubon, favor its escaping notice wherever it may exist.

The specimen was met with in a wet place, overgrown closely by a kind of slender rush-like grass, from the midst of which the notes of these birds were heard, and at first mistaken for those of the Marsh Wren. A search was immediately instituted for the singers, which Mr. Bell soon ascertained could not be the Wren in question, the notes being much softer and more prolonged. Much difficulty was encountered in the endeavor to raise them from the long close grass to which they closely confined themselves, and they were several times nearly trodden on before they would take wing, almost instantaneously realighting within a few steps, and running like mice through the grass. After a while two were shot while on the wing, and proved to be adult male and female. The party found this species quite abundant in all such situations, and there seems to have been no doubt that it was breeding.

GENUS **PASSERCULUS**, BONAP.

Passerculus, BONAP. Comp. List Birds, 1838. (Type, *Prinagilla savanna*.)

GEN. CHAR. Bill moderately conical; the lower mandible smaller; both outlines nearly straight. Tarsus about equal to the middle toe. Lateral toes about equal, their claws falling far short of the middle one. Hind



Passerculus savanna

toe much longer than the lateral ones, reaching as far as the middle of the middle claw; its claws moderately curved. Wings unusually long, reaching to the middle of the tail, and almost to the end of the upper coverts. The tertials nearly or quite as long as the primaries; the first primary longest. The tail is quite short, considerably shorter than the wings; as long as from the carpal joint to the end of the secondaries. It is emarginate, and slightly rounded; the feathers pointed and narrow.

The essential characters of this well-marked genus lie in the elongated wings, longer than the tail, the tertiaries equal to the primaries, the first

quill almost longest. The legs are long, the outstretched toes reaching to the end of the tail; the lateral toe considerably shorter than the middle, which is not much longer than the hinder. The tail is short, narrow, and emarginate; the feathers acute.

Species and Varieties.

COMMON CHARACTERS. Above grayish-brown, beneath white; whole upper surface, as well as the breast and sides, streaked with dusky. A light superciliary stripe, and a whitish maxillary one, the latter bordered above and below by stripes of coalesced dusky streaks.

A. Bill small, the culmen slightly concave in the middle portion; a median light stripe on the crown.

1. **P. savanna.** Superciliary stripe yellow anteriorly; streaks on the back blackish, sharply defined.

Throat and upper part of abdomen unstreaked; vertex-stripe without yellow tinge.

Bill .34 from forehead and .25 in depth at the base; wing, 2.85; tail, 2.30. Colors deep; outer surface of wing (in spring) decidedly reddish. *Hab.* Eastern Province of North America . . . var. *savanna*.

Bill, .32 and .20, or less; wing, 2.75; tail, 2.10. Colors very pale; outer surface of wing (in spring) pale ashy. *Hab.* Western Province of North America, except coast of California, where replaced by var. *anthinus* var. *alaudinus*.

Bill, .37 and .27, or considerably more; wing, 3.10; tail, 2.40. Colors as in *savanna*. *Hab.* Northwest coast of North America var. *sandwichensis*.

Throat and upper part of abdomen streaked; vertex-stripe strongly tinged with yellow.

Bill, .33 and .19; wing, 2.50; tail, 1.90. Colors darker than var. *savanna*, the ground-color more uniform, and the black streaks heavier and more numerous. *Hab.* Coast of California. var. *anthinus*.

2. **P. princeps.** Superciliary stripe white anteriorly; streaks on the back sandy-brown, badly defined. Wing, 3.25; tail, 2.60; bill, .45 and .23; tarsus, .95; middle toe, .80. *Hab.* Eastern Massachusetts (northern regions in summer?).

B. Bill robust, the culmen arched: no median light stripe on the crown. Superciliary stripe white anteriorly; streaks on the back sandy-brown, obsolete.

3. **P. rostratus.**

Bill, .43 and .30; wing, 2.90; tail, 2.25. Ground-color above fulvous-gray, beneath white; the streaks, above and below, sandy-brown. Colors much as in *P. princeps*. *Hab.* Coast of California, to the mouth of the Colorado River; Cape St. Lucas in winter var. *rostratus*.

Bill, .33 and .22; wing, 2.55; tail, 2.00. Ground-color above plumbeous-gray; beneath white; streaks blackish-brown. *Hab.* Cape St. Lucas (resident?) var. *guttatus*.

A careful examination of the very large series of *Passerculus* allied to *savanna* in the museum of the Smithsonian Institution, recently made,

brings us to the same conclusion as that reached in 1858, namely, that, granting a single species extending over the whole of North America, there



Passerculus savanna.

are several geographical races in different regions. Thus, taking the eastern bird as the standard, with its dark colors, reddish wings, and deep yellow superciliary stripe, and the comparative or entire absence of spots on the lower part of breast, we have in the middle province, and to some extent in the western, a race rather smaller, with more attenuated and longer bill, and paler colors; the wings grayish, the yellow of head being scarcely appreciable (var. *alaudinus*). On the coast of California, an-

other series of the size and proportions of the last, but with dark yellow superciliary stripe, — the vertex-stripe even yellowish, — dark colors, and the lower part of breast, as well as the throat, decidedly streaked, as well as the jugulum (var. *anthinus*); and finally on the northwest coast, from Puget Sound to Kodiak, a fourth race, much larger than typical *P. savanna*, but absolutely undistinguishable in color, proportion of bill, etc. (var. *sandwichensis*). *P. anthinus* is not found north of California, but the other two of the western race may occur together at any point of the coast north, perhaps, of the Columbia River.

Passerculus savanna, BONAP.

SAVANNA SPARROW.

Fringilla savanna, WILSON, Am. Orn. III, 1811, 55, pl. xii, f. 2. — Ib. IV, 1811, 72, pl. xxiv, f. 1. — AUD. Orn. Biog. II, 1831, 63; V, 1839, 516, pl. cix. *Passerculus savanna*, BON. List, 1838. — Ib. Conspectus, 1850, 480. — CAR. MUS. HEIN. 1851, 131. BAYRD, Birds N. Am. 1858, 442. COUES, P. A. N. S. 1861, 223. SAMUELS, 301. *Emberiza savanna*, AUD. Syn. 1839, 103. — Ib. Birds Am. III, 1841, 68, pl. cx. *Fringilla hypolepis*, GM. I, 1788, 922. — LIECHT. Verzeichniss, 1823, No. 250. Gmelin's description, based on Pennant Arctic Zool. II, 376 (winter Finch), applies equally well to a large number of species. *Linaria savanna*, RICHARDSON, List, 1837.

SP. CHAR. — Feathers of the upper parts generally with a central streak of blackish-brown, the streaks of the back with a slight rufous suffusion laterally; the feathers edged with gray, which is lightest on the scapulars, and forms there two gray stripes. Crown with a broad median stripe of yellowish-gray. A superciliary streak from the bill to the back of the head, eyelids, and edge of the elbow, yellow, paler behind. A yellowish-white mandibular stripe curving behind the ear coverts, and margined above and below by brown. The lower part of the throat is a series of thickly crowded spots on the sides of the throat, which are also found on the sides of the neck, across the upper part of the breast, and on the sides of the body, a dusky line back of the eye, making three on the side of head the being the two mandibular. A few faint spots on the throat and chin. Rest

of under parts white. Outer tail-feathers and primaries edged with white. Length, 5.50; wing, 2.70; tail, 2.10.

Young. Ground-color of the upper parts (except wings and tail) light ochraceous, more brownish on top of head, upper part of back, and on upper tail-coverts; the streaks blacker and more conspicuous than in the adult. Beneath with an ochraceous tinge anteriorly, the streaks broader, and deeper black, than in the adult, though less sharply defined. The infra-maxillary streak expanded into a broad blackish elongated blotch.

HAB. Eastern North America to the Missouri plains, and northwest to Alaska. Cuba, winter (CAB. Jour. IV, 6).

Specimens vary considerably in size, color, and shape of bill, but the average is as described. Spring birds have the markings sharper and clearer, the dark streaks with little or no suffusion of rufous.

HABITS. The Savanna Sparrow is an abundant species throughout North America, from the Atlantic sea-board to the Great Plains. It is, however, everywhere much less common in the interior than nearer the shore. The Smithsonian specimens are from points as far south as Georgia and Louisiana, and as far west as the Black Hills of Wyoming. It passes north through Massachusetts, from the first to the middle of April, and some remain to breed in the eastern part of the State. Mr. Maynard speaks of it as a common summer resident. This, however, is true only of a few restricted maritime localities, but is not so of the entire eastern portion of the State. It occurs both in the salt marshes of Charles River and in the vicinity of Fresh Pond, but I could never trace it in any of the neighboring towns. It is occasionally met with in inland situations where we would not naturally look for it. In the summer of 1869, Mr. William Brewster found quite a colony of these birds in an open field near the Glen House, at the foot of Mt. Washington. They had nests with eggs the last of July and the first of August.

In Western Massachusetts, according to Mr. Allen, it rarely or never stops to breed. In Western Maine, Mr. Verrill mentions it as a common summer visitant, and as breeding there in the latter part of May. In the vicinity of Eastport, and in all the islands of the Grand Menan group, I found these Sparrows very abundant. They almost invariably built their nests in depressions on the edge or just under the projecting tops of high bluffs of land near the sea. They were by far the most abundant of the land-birds, and it was quite common to find their nests in close proximity one to another. They arrive there in April, and leave in September, passing slowly south more in reference to the abundance of their food than the severity of the season, until the weather becomes very severe, when they all disappear. They winter in the Southern States, from Virginia to Georgia, and are especially abundant in the Carolinas. Dr. Coues states that they were very common about Columbia from October to April, moving in large flocks and associating with other species. Wilson states that he met with this species, from Savannah to New York, in all the low country, and regarded it as resident in those places, but rarely found at a distance from the sea-shore. He found them especially numerous at Great Egg Harbor, N. J.

Dr. Coues, in his visit to Labrador, in 1860, found this Sparrow abundant in that region in low moist meadows and marshy tracts near the sea-shore, but never noticed it in any other situations. He frequently observed it there feeding on the beds of dried eel-grass along the rocky shores, searching for food in company with the Titlarks and small Sandpipers.

During my visits to the islands of the Bay of Fundy, in one of which I remained a number of days, I had a good opportunity to notice these birds. In many respects their habits undergo noticeable changes during the breeding-season. As they pass north or south in their migrations, they are not particularly shy or difficult to approach, but when they had nests they seemed to become particularly cautious and mistrustful. The male and female sat by turns upon their eggs, but generally one remained within hailing distance, and always gave promptly a signal of danger when the nest was approached, at which the other would glide from the nest, running off on the ground like a mouse. I found it impossible to identify by shooting the parent on the nest, and only accomplished its identification by means of snares. When once lost in the tall grass, it was impossible to find it again, or if it reappeared it was impossible to tell which of the many chirping Sparrows, all of them out of reach of shot, and keeping a sharp lookout on my movements, had any connection with the nest. This manoeuvre was gone through with in every nest I found, but I soon learned to distinguish them without the need of gun or snare.

This Sparrow is eminently terrestrial, confining itself almost entirely to the ground, and rarely alighting on anything even so high as a fence. Though frequenting low moist grounds, its nest is always in a dry spot and usually somewhat elevated. The nest is almost always sunk into the ground, is made very simply and loosely of dry grasses, with a lining of softer materials of the same. I have never found any other material than this in the many nests I have examined, although nests of var. *alaudinus*, in the vicinity of Fort Anderson, are frequently lined with feathers or deers' hair, according to MacFarlane.

The eggs, five or six in number, vary considerably in their appearance. In shape they are a rounded oval, one end being much more pointed than the other. They measure .68 by .55 of an inch. In some the ground-color, which is of a greenish-white, is plainly visible, being only partially covered by blotches of brown, shaded with red and purple. These blotches are more numerous about the larger end, becoming confluent and forming a corona. In others, the ground-color is entirely concealed by confluent ferruginous fine dots, over which are darker markings of brown and purple and a still darker ring of the same about the larger end.

Passerculus savanna*, var. *alaudinus*, BONAP.*WESTERN SAVANNA SPARROW.**

Passerculus alaudinus, BP. Comptes Rendus, XXXVII, Dec. 1853, 918, California. — IB. Notes Ornithologiques Delattre, 1854, 18 (reprint of preceding). — BAIRD, Birds N. Am. 1858, 446, pl. xlv. — COOPER & SUCKLEY, 197, pl. xxviii, f. 2. — ELLIOT, Illust. Am. B. III. — DALL & BANNISTER, Tr. Ch. Ac. I, 1869, 284 (Alaska). — COOPER, Orn. Cal. I, 181. *Passerculus savanna* and *P. anthinus*, DALL & BANNISTER, Tr. Ch. Ac. I, 1869, pp. 283, 284.

SP. CHAR. Similar to *P. savanna*, but smaller; the bill slenderer and more elongated. Little of yellow in the superciliary stripe (most distinct anteriorly); the rest of the head without any tinge of the same. General color much paler and grayer than in *P. savanna*. Breast with only a few spots. Length, 5.25; wing, 2.75; tail, 2.30.

HAB. Middle and Western Provinces of North America; south to Orizaba, north to Alaska (Kodiak) and the Arctic coast. Oaxaca (Sep. Oct.); Vera Cruz (winter, SUMMICHRAST).

This western race of *P. savanna* is smaller, considerably paler in general colors, the superciliary stripe with little yellow in it, and the bill more slender, and longer. In coloration, some Atlantic coast specimens often exhibit an approximation, especially in the pale tint of the superciliary stripe; but the bill is always decidedly more attenuated in *alaudinus*.

The Western Savanna Sparrow is a common species throughout the Western Province of North America, from the plains to California, and from Alaska to Mexico. In California it appears to be replaced along the Pacific coast by the variety *anthinus*, a quite different and very local form. In Alaska, specimens were obtained by the naturalists of the Russian Telegraph Expedition at various localities, chiefly in the interior, and on the Yukon—it was obtained by Mr. Lockhart. Dr. Cooper found it at Fort Steilacoom, in Washington Territory, where it was in company with *P. sandwichensis*, in the wet meadows. In California this species inhabits chiefly, according to Dr. Cooper, the dry plains of the interior of the State. The statement of the occurrence of this form anywhere along the coast of California should be received with considerable doubt, since in the large series of these birds all specimens from this region are of the variety *anthinus*, an exclusively littoral type.

HABITS. The Western Savanna Sparrow was found throughout the Great Basin, by Mr. Ridgway, in all wet, grassy situations, in which preference it is like its eastern relative. It was very abundant at Carson City, inhabiting exclusively the meadows. At Salt Lake City it was also very abundant, frequenting the wet meadows near the Jordan.

This bird was also obtained at Sitka by Bischoff, and was found on the Yukon by Mr. Lockhart. It is the only species found in the Valley of the Mackenzie, up to the Arctic coast.

Dr. Cooper also met with it among the low meadows of Washington Ter-

ritory, where they arrived in March, and remained until late in October. They were usually found among the grass, from which they rarely rise, except to sing their faint and lisping trill from a weed or some low bush. Mr. Ridgway represents this song as corresponding with the syllables *witz-witz-wih'-tull*. This, he states, is uttered in a weak and lisping manner, as the bird perches on a bush beside the brook, or on a fence, or as it nestles among the grass on the ground.

Dr. Cooper speaks of them as only winter visitants in California, and there residing only on the dry interior plains, as far south as San Diego, where they remain in large flocks until April. He has never met with this bird during the summer months, though some are supposed to remain and breed in the high prairies. He did not meet with any about the summits of the Sierra Nevada, in September. They appeared to prefer the dry rolling prairies to marshes, though they were occasionally found in the latter.

This species is also a migratory visitant to the Department of Vera Cruz, Mexico, where they are said by Sumichrast to pass the winter.

Their nests are built upon the ground, and are composed almost entirely of the dry stems of grasses, and are lined with finer materials of the same. Their eggs measure .75 of an inch in length by .52 in breadth, have a greenish-white ground, over which are distributed numerous markings, spots, and blotches of various sizes, of a light purplish-brown and a deeper red-brown, confluent about the larger end, where they form a crown.

Near Fort Anderson nests were found in great numbers, no less than two hundred and four having been obtained during four summers in that locality. These nests were all taken on the ground, under low grass, in dry spots in a large marshy prairie, and it is stated that they were never found in any other situation or locality.

***Passerculus savanna*, var. *sandwichensis*, BAIRD.**

NORTHWESTERN SAVANNA SPARROW.

Emberiza sandwichensis, GM. 1, 1788, 875. — *Emberiza arctica*, LATHAM, Ind. Orn. 1, 1790, 414. — *Fringilla arctica*, VIGORS, Zool. of Blossom, 1839, 20 (perhaps one of the smaller species). — "BRANDE, Leon. Ross. 2, 6." — *Eusparia arctica*, BR. Conspectus, 1850, 469. — *Zonotrichia arctica*, FINSCH, 1872. — *Emberiza chrysops*, PALLAS, Zoog. Rosso-As. II, 1811, 45, tab. xlviii, fig. 1 (Utalaska). — *Sandwich Bunting*, LATH. SYN. II, 1783, 202. — *Utalaska Bunting*, PENNANT, Arctic Zool. II, 363, 320, No. 229 (not of p. 364, No. 233). — *Passerculus sandwichensis*, BAIRD, Birds N. Am. 1858, 114. — DALL & BANNISTER, Tr. Ch. Ac. I, 1869, 284. — COOPER, Orn. Cal. I, 180. — *Passerculus savanna*, DALL & BANNISTER, Tr. Ch. Ac. I, 1869, 283.

SE. CHAR. — Almost exactly like *P. savanna*, but half an inch longer, with much larger bill. — Length, 6.12 inches; wing, 3.00; tail, 2.55. — Bill above, .50; below, .36; gape, .56; depth, .27.

HAB. — Northwestern coast from the Columbia River to Russian America.

Specimens of this race from Sitka are absolutely undistinguishable from eastern *P. savanna* except in size; the colors and proportion of bill being the same. A young bird (from Kodiak) differs from that of *savanna* in larger size, and a bright reddish-fulvous tinge to upper parts, and a deep yellowish-fulvous tinge on jugulum and along the sides.

HABITS. This variety is the northwest-coast form of the common Savanna Sparrow, and is found during the summer from Oregon to Alaska. Dr. Suckley states that he found this species an abundant spring visitor at Fort Steilacoom. Dr. Cooper, in his Zoölogy of Washington Territory, states it to be only a passenger through that section, migrating northward, at the end of April, in pairs, and not returning until the end of September. They come back in flocks, and frequent the shores and prairies along the sea-coast. Their plumage seems to be the same at all seasons. Nothing is known of their note. They are supposed to spend their winters in Southern Oregon and California, though their actual presence has not been detected in either State. They do not remain during the summer near the Columbia, but pass to the north, or to the interior plains east of the Cascade Range. Dr. Cooper states that their habits closely resemble those of *P. anthinus*.

Mr. Dall states that two specimens of this species were taken at Sitka by Mr. Bischoff.

***Passerculus savanna*, var. *anthinus*, BONAP.**

CALIFORNIA SHORE SPARROW.

Passerculus anthinus, BONAP. Comptes Rendus, XXVII, Dec. 1853, 919, Russian America.¹
— *IB.* Notes Ornith. Delattre, 1854, 19. — BAIRD, Birds N. Am. 1858, p. 445. — COOPER, Orn. Cal. I, 1870, 183.

SP. CHAR. Similar to *P. savanna*, but smaller. Beneath tinged with reddish. Breast and upper part of belly thickly spotted with sharply defined sagittate brown spots, exhibiting a tendency to aggregation on the middle of the belly. Superciliary stripe and one in the middle of the crown decided greenish-yellow, the head generally tinged with the same, as also the back and sides of the neck. Under tail-coverts somewhat streaked. Length, 5.00; wing, 2.66; tail, 2.24.

HAB. Coast of California, near San Francisco; "Russian America, Kodiak" (BONAPARTE).

This is the most strongly marked of the several races of *P. savanna*, differing from all the others in several important respects. The markings beneath are more generally dispersed, extending back upon the lower part of the breast, and forward over the throat; the lower tail-coverts have distinct medial blackish streaks, though they are somewhat concealed. The median stripe on the crown is decidedly greenish-yellow, not pale ashy; the whitish edges to the interscapular feathers, so conspicuous in the other races, are more concealed, presenting a more uniformly brown surface above, with broader

¹ From the fact that this form is not found in any part of Alaska, nor, indeed, north of California, it is probable that the localities of *anthinus* and *alaudinus* were transposed in Bonaparte's original descriptions.

black stripes. The broad lateral stripes of the crown are deep olive or hair-brown, with narrow, sharply defined, intense black streaks, instead of pale grayish as in *alaudinus* (spring dress), or light brown as in *savanna* (spring), with broader, less deep, black streaks.

HABITS. The Shore Sparrow of California is said to be, to a remarkable degree, the peculiar marsh species of the Pacific coast of that State. Dr. Cooper states that he very rarely met with these birds out of the salt marshes, where they lie so close and run so stealthily among the weeds that they are flushed with difficulty. They rise only to fly a few rods, and drop again into their covert. They are not at all gregarious, except when migrating, and are found singly or by pairs. They are abundant about San Francisco in the winter, though Dr. Cooper is not sure that any are found so far south in the summer. Near San Diego, in February, they had already begun to utter their short and pleasant song, as they perched on the top of some tall weed. Dr. Cooper observed them in that neighborhood into April, but did not succeed in finding any of their nests, nor was he ever able to meet with this species at San Pedro in summer.

Dr. Cones speaks of (Ibis, 1866, p. 268) finding three species of the difficult group of *Passerculi*, and all of them very abundant, in Southern California in November. These were *P. rostratus*, *P. alaudinus*, and *P. anthinus*. The *anthinus* seemed confined to the moist salt grass and sedgy weeds of the sea-shore itself. It was flushed with great difficulty, and then its flight was very rapid and irregular. It would alight again almost immediately, and run with great celerity among the roots of the thick grasses, and was therefore exceedingly difficult to procure. *P. alaudinus* was common two or three miles away from the coast, but Dr. Cones did not find one mixing with *P. anthinus*. It was a brush and weed, rather than a grass, species, associating with *Anthus ludovicianus* and *Zonotrichia coronata*.

Passerculus princeps, MAYNARD.

IPSWICH SPARROW.

Centronyx bairdi, MAYNARD, Naturalist's Guide, 1870, 117, frontispiece (Ipswich, Mass.).
Passerculus princeps, MAYNARD, American Naturalist, 1872.

SP. CHAR. Bill small, exactly the same in form and size as that of *Centronyx bairdi*, but proportionally smaller; tertials scarcely exceeding the secondaries; tail emarginate, the feathers acute, the intermediate attenuated terminally. Outstretched feet reaching about half-way to the end of the tail. In color almost exactly like *P. rostratus*, but different in markings. Above light ashy, the dorsal feathers light sandy-brown centrally, producing an obsolete spotted appearance; shafts of dorsal feathers black. Outer surface of the wings pale sandy-brown, the feathers darker centrally; tertials with their outer webs whitish, and with a conspicuous black central area. Crown becoming darker brown anteriorly, where it is divided by a rather indistinct line of ochraceous-white; an indistinct superciliary stripe, and a very conspicuous maxillary stripe of the same; the latter bordered above, from the rictus to the end of the auriculars, by a narrow stripe of

dusky; lores and sub-orbital region like the superciliary stripe; auriculars pale brownish like the crown, bordered along the upper and lower edge with a dusky narrow stripe. Beneath white, slightly tinged with ashy on the flanks; sides of the throat, whole breast, sides, and flanks, with narrow streaks of sandy-brown, more blackish toward the shaft; abdomen, crissum, and lining of the wing, immaculate; throat with a few minute specks, but along each side bordered by a "bridle" of suffused streaks.

♂. (Collector's No. 1,744, Ipswich, Mass. Dec. 4, 1868; C. J. Maynard.) Wing, 3.25; tail, 2.60; culmen, .45; tarsus, .95; middle toe, .80; hind claw, .40.

♀. (Collector's No. 6,245, Ipswich, Oct. 15, 1871; C. J. M.) Wing, 2.90; tail, 2.40; culmen, .50; tarsus, .85; middle toe, .65; hind claw, .30.

(Collector's No. 6,224, Ipswich, Oct. 14, 1871; C. J. M.) Wing, 3.00; tail, 2.30; culmen, .50; tarsus, .85; middle toe, .60; hind claw, .30.

The specimens described above were at first supposed to be *Centronyx bairdi*, having several points of resemblance to that species, a comparison with the type in Professor Baird's collection at first failing to establish a difference, as it was in faded and much worn summer plumage, while the Massachusetts specimens were in perfect, blended fall dress, so that a satisfactory comparison was almost impossible. A more recent examination, however, with the advantage of two additional specimens of the Massachusetts bird, has fully convinced Mr. Maynard that his specimens are not *Centronyx bairdi*, and that, indeed, they are referrible in all respects to the genus *Passerculus*.

In carefully examining the type of *Centronyx bairdi*, it is seen that its characteristic features are the following: Outstretched feet reaching beyond the end of the tail; hind claw as long as its digit, and much curved;—whereas in Mr. Maynard's specimens the outstretched feet reach to only about the middle of the tail, while the hind claw is much shorter than its digit, and only slightly curved. With a wing .10 to .45 of an inch longer, they have the tarsus not any longer, and proportionally more slender. In coloration they are still more different. The most striking feature in *C. bairdi* is a broad and very conspicuous median stripe of ochraceous-buff on the crown, bordered on each side by an aggregation of black streaks, which form the predominating color of the lateral stripes; of this median stripe there is scarcely any trace in the specimens under consideration, while the crown generally is grayish-brown, with small dusky streaks; *C. bairdi* has broad, conspicuous, black stripes on the back, while *P. maynardi* has obsolete sandy-brown ones; in *C. bairdi* there are only a few small streaks of black across the jugulum and along the sides and flanks, while in *P. maynardi* the whole breast, as well as the sides and flanks, are thickly streaked with broader marks of sandy-brown.

In point of coloration, as well as in the feet, there is in reality a much closer resemblance to *Passerculus rostratus*; but in this the very different bill and different arrangement of markings are sufficient distinctive characters.

Upon the whole, therefore, there can be little doubt that the present birds are well entitled to the name which Mr. Maynard has given them; for after

making all possible allowance for seasonal differences in coloration, we have found it impossible to reconcile them with the *C. bairdi*.

In this species there is a slight superficial resemblance to *Pooecetes gramineus*; but upon comparison it will be found to be entirely different: thus, *P. gramineus* lacks the median light stripe on the crown, has the lesser wing-coverts rufous and the lateral tail-feathers white, while the streaks are all blackish and the ground-color different; the generic details, too, are quite different.

HABITS. This species has been obtained only in Eastern Massachusetts, where, in the neighborhood of Ipswich, it was found among the sand-hills by the sea-shore. The place where the individuals taken were met with is a rather remarkable tract, three miles in length and nearly one in breadth. It is as treeless as the Great Plains, and as bleak and barren, with no vegetation except a scant growth of coarse grass. Mr. Maynard obtained his first specimen early in December, 1868. Although others were seen, yet this was all he was then able to obtain. He has since taken others in the same place and season. Nothing is known as to its habits. It uttered, as it rose, a short chirp of alarm.

Passerculus rostratus, BAIRD.

SAN DIEGO SPARROW.

Enderiza rostrata, CASSIN, PR. A. N. S., VI, 1852, 348. *Ammodramus rostratus*, CASSIN, Ill. I, 1855, 226, pl. xxxviii. *Passerculus rostratus*, BAIRD, Birds N. Am. 1858, 446. — COOPER, Orn. Cal. I, 1870, 184.

SP. CHAR. Bill very long (.55 of an inch above). Whole upper parts and sides of head and neck pale brownish-gray (almost fulvous), nearly every feather with a darker central blotch, darkest along the shaft. A scarcely appreciable central stripe in the crown, an obscure yellowish-white superciliary, and a whitish maxillary one. Under parts pure white; streaked on the breast and the sides of throat and body with dark brown (the streak paler externally). Under tail-coverts unspotted white. Tail and wing feathers and wings margined with the color of the back; the edges of tertiaries rather paler. Length, 5.30; wing, 2.90; tail, 2.30.

HAB. Coast of California, south to Cape St. Lucas; mouth of Colorado River (Dr. PALMER).

The bill of this species is very long and conical, the cutting edge nearly straight. The wings are rather long, the tertiaries nearly as long in the closed wing as the primaries; the second, third, and fourth quills longest, the first rather longer than the fifth. The tail is short and emarginate, the feathers narrow, acute, and moderately stiff. The tarsi are long; the claws little curved.

This species resembles the *Passerculus savanna* rather more than any of the other sparrows with spotted breasts; the bill is, however, very much longer and larger, exceeding any of our American species of its size, the upper outline more convex. Its colors are much paler, and it lacks the

yellow on the head and wing. The much shorter tail and entire absence of rufous distinguish it from the spotted *Melospizas*. In shape the bill is like that of *Ammodromus cauducutus*, but it is larger; the head lacks the yellow, etc.

In some specimens the streaks on the back are almost obsolete.

HABITS. So far as is known, this bird seems to have a somewhat restricted habitat, being apparently confined to the sea-coast of Southern California. There it was first met with by Dr. Heermann, in the neighborhood of San Diego, and was described by Mr. Cassin as an *Ammodromus*, with which genus of birds it seemed to have many peculiarities in common. Dr. Heermann first met with this bird in 1851, on the shores of the bay of San Diego, in company with other species, apparently in search of grass-seed. Afterwards, in the Pacific Railroad Survey, with Lieutenant Williamson, he again met with these birds in considerable numbers at Santa Barbara and San Pedro. In all the places in which he met with it he found it frequenting low sandy beaches, and the heavy sedge-grass which abounds on the shores. On the former it seemed to be feeding on marine insects and seeds thrown up by the tide, and in the latter to find places for easy and immediate concealment when alarmed or pursued. Naturally it appeared to be a quiet and unsuspicious bird. He heard it utter no other note than a short sharp chirp.

Dr. Cooper thinks this species has a much greater affinity to the *Ammodrami* than to the *Passerculi*, both in its bill and claws, as well as in its habits. He found them very abundant, both at San Pedro and San Diego, at all seasons, and he does not think that they migrate at all from those localities. He found them frequenting the shores of the bays and the sea-beaches. They also came confidently and familiarly about the buildings near the water, feeding on any seeds or insects they could find. On the beach they run along the sand, in the rows of drifted sea-weeds, seeking their food, and rarely take to flight unless surprised, and then only fly a short distance. Dr. Cooper has never known them to alight on any bush, nor does he think that they have any song. The only note he has ever heard them utter is a short chirp. At San Pedro he saw them, in July, feeding their young, but he has never found a nest that he was certain belonged to this species.

Dr. Coues found this bird abundant in Southern California, where it kept among the thick weeds of the dry plain, and was much on the ground, where it ran as easily as a *Pipilo*, often flying up into the bushes and resting there quietly. They were to be seen also in great numbers sunning themselves and catching flies on the piles of lumber on the wharf, so tame as to be almost liable to be struck by a cane.

It is a winter resident at Cape St. Lucas, where Mr. Xantus found them abundant. They were not seen there in summer, though it is probable they reside on the shores in its neighborhood. Their nest and eggs remain unknown.

Passerculus rostratus, var. guttatus, LAWRE.**ST. LUCAS SPARROW.**

Passerculus guttatus, LAWRENCE, ADD. N. Y. Lye. VIII, 1867, 473. — COOPER, Orn. Cal. I, 185.

SP. CHAR. Above plumbeous-gray; the feathers of the back with dusky centres and paler edges; the top of head also streaked with dusky and with an almost inappreciable median stripe of lighter. Upper tail-coverts slightly darker in the centre. No rufous edgings to the feathers. Head with a pale yellowish-white band from bill over the eye; and a mandibular one, nearly white, bordered above and below by the dusky line of other *Passerculus*. Under parts white, thickly streaked on jugulum, breast, and flanks with dusky, faintly on under tail-coverts. Bill and legs rather dusky; iris brown. Length, 5.00; wing, 2.50; tail, 1.95; tarsus, .80; middle toe and claw, .75; bill above, .51; gape, .56; greatest height, .25.

HAB. Cape St. Lucas (Dec., 1859).

This bird, of which a single specimen only is so far known, is very closely related to *P. rostratus*, though very easily distinguished from it. It is considerably smaller than *rostratus*, the bill more slender, the upper parts much darker, being plumbeous, not sandy-colored; the stripes beneath darker; the bill and legs more dusky. These differences may not indicate a distinct species, but as the specimen here described differs entirely from all the specimens of a large number of *P. rostratus*, it is yet entitled to consideration as a marked variety, — probably the resident race at Cape St. Lucas, where the var. *rostratus* is merely a winter visitor.

HABITS. The St. Lucas Finch is a new species, in regard to the habits of which nothing whatever is as yet known. It was obtained at San José, in Lower California, by Mr. John Xantus, in December, 1859. It was found in company with a flock of *Passerculus rostratus*, and the presumption is that its habits may resemble those of that little-known species.

GENUS POOCÆTES, BAIRD.

Poocætes, BAIRD, Birds N. Am. 1858, 447. (Type, *Fringilla graminea*, GM.)

GEN. CHAR. Bill rather large; upper outline slightly decurved towards the end, lower straight; commissure slightly concave. Tarsus about equal to the middle toe; outer toe a little longer than the inner, its claw reaching to the concealed base of the middle claw; hind toe reaching to the middle of the middle claw. Wings unusually long, reaching to the middle of the tail as far as the coverts, and pointed; the primaries considerably longer than the secondaries, which are not much surpassed by the tertiaries; second and third quills longest; first little shorter, about equal to the fourth, shorter than the tail; the outer feathers scarcely shorter; the feathers rather stiff; each one acuminate and sharply pointed, the feathers broad nearly to the end, when they are obliquely truncate. Streaked with brown above everywhere; beneath, on the breast and sides. The lateral tail-feather is white. Shoulder chestnut-brown.

The essential character of the genus consists in the long and pointed wings, longer than the tail and without long tertials; and the rather stiff, forked tail, with its acute feathers. But one species is recognized at present.

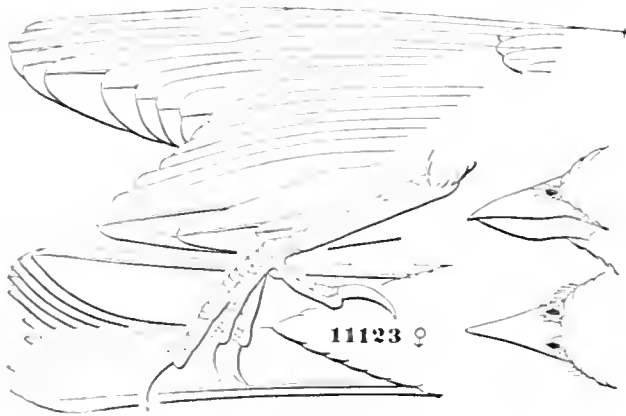
Poocætes gramineus, BAIRD.

GRASS SPARROW: BAY-WINGED BUNTING.

Var. gramineus.

Fringilla graminea, Gm. Syst. Nat. I, 1788, 922. — AUD. Orn. Biog. I, 1831, 473; V, 502, pl. xc. *Emberiza graminea*, WILSON, Am. Orn. IV, 1811, 51, pl. xxxi, f. 5. — AUD. Syn. 1839, 102. — IB. Birds Am. III, 1841, 65, pl. clix. — MAX. Cab. Jour. vi, 1858, 342. *Fringilla (Zonotrichia) graminea*, SWAINSON, F. B. Am. II, 1831, 254. *Zonotrichia graminea*, BON. List, 1838. — IB. Conspectus, 1850, 478. *Poocætes gramineus*, BAIRD, Birds N. Am. 1858, 447. — SAMUELS, 303.

SP. CHAR. Tail-feathers rather acute. Above light yellowish-brown; the feathers everywhere streaked abruptly with dark brown, even on the sides of the neck, which are paler. Beneath yellowish (sometimes reddish) white; on the jugulum and sides of neck and body streaked with brown. A faint light superciliary and maxillary stripe; the latter margined above and below with dark brown: the upper stripe continued around the ear-coverts, which are darker than the brown color elsewhere. Wings with the shoulder light chestnut-brown, and with two dull whitish bands along the ends of the coverts; the outer edge of the secondaries also is white. Exposed portion of outer tail-feather, and edge and tip of the second, white. Length, about 6.25; wing, 3.10; tail, 2.50; bill, .33 from frontal feathers to point, by .33 in depth at base; tarsus, .72. Bill yellow, dusky above; legs yellow. (Measurement of No. 10,147 ♂, Washington, D. C.)



Poocætes gramineus.

HAB. Eastern Province of United States.

Var. confinis.

Poocætes gramineus, var. *confinis*, BAIRD, Birds N. Am. 1858, p. 448 (in text under *P. gramineus*). *Poocætes gramineus*, COOPER & SUCKLEY, 200. — COOPER, Orn. Cal. I, 186.

SP. CHAR. Resembling *P. gramineus*, but colors paler, the dark streaks narrower. Bill more slender, tarsi longer. (Measurement of 40,803 ♂, Fort Whipple, Arizona: Bill, .36 from point of frontal feathers by .25 in depth through base; tarsus, .78; wing, 3.35; tail, 2.80).

HAB. Western and Middle Provinces of United States, south into Mexico; Oaxaca (SCL. 1859, 379; March).

This species is readily identified by the absence of a median stripe on the head, the chestnut-brown of the shoulder, and the white lateral tail-feathers. The young birds have the ground-color above more whitish, the streaks blacker, in sharper contrast; the streaks on jugulum, etc., less sharply de-

tinged, the general appearance, however, is not different from the adult. Sometimes there is a decided cinnamon wash beneath. Western specimens (var. *confinis*) appear to be paler, with longer wings, and longer and more slender bills, in this respect resembling other Finches (*Melospiza*, *Passerculus*, etc.).

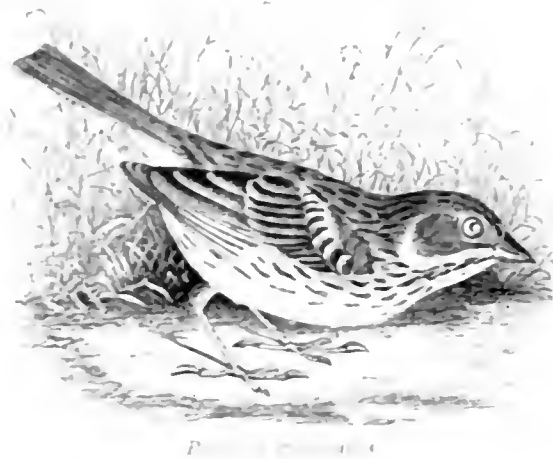
All specimens from west of the Rocky Mountains are to be referred to var. *confinis*.

HABITS. The Bay-winged or Grass Finch is a very abundant species wherever found, and has a very extended distribution. Accepting as one species the slightly variant races above indicated, this bird extends from Florida and Mexico, on the south, to the 57th parallel of latitude, and from the eastern to the western shores. It was found by Richardson frequenting the plains of the Saskatchewan, where it arrives early in May and leaves in September, and where it nests abundantly in the short withered grass of that sterile region. Richardson did not trace it farther north than the 57th parallel, and it was not obtained on the Yukon or Anderson Rivers by Mr. MacFarlane or Mr. Lockhart. It breeds from Northern Virginia north.

In the Middle States it is partially resident, a portion remaining all the winter. South of Washington it is chiefly migratory, only found, in any numbers, from November to March, and probably but few remaining to breed. Audubon states that he never saw any of this species in any portion of Louisiana, Missouri, Kentucky, or Ohio. Mr. Dresser, on the other hand, found them common about San Antonio in August and September, and also in May and June, and had no doubt that some remain to breed.

It is very abundant throughout New England, arriving in some seasons as early as March 11, and remaining until quite late in the fall, often through November. It is found chiefly in dry open fields and pastures, where it nests, with no pains at concealment, on the ground, in depressions made by its own work. It is an unsuspicious and fearless species, neither seeking nor avoiding the companionship of man. It does not usually build near houses, yet is not unfrequently known to do so. It may be often found perched on fences along the roadside, chanting its simple and pleasing lay, and quite as frequently in the road feeding and dusting itself. The latter operation it is very fond of practising, and almost any day in the summer these birds may be found in such situations.

West of the Great Plains is found a marked variety of this species, differing in many respects from the eastern. The western species or race of this Finch, Mr. Ridgway states, is an abundant summer bird in all the elevated



grassy portions of the West. It is especially characteristic of the higher grassy slopes of the elevated mountains, particularly in the Rocky Mountain regions, and its sweet and simple song is one of the pleasant associations of those regions. It descends, in the autumn, to the lower districts, having been observed during September in the greatest abundance among the "rye-grass" meadows of Senot Valley, at the northern end of the East Humboldt Range. It nests on the ground in grassy banks, in various situations.

Dr. Suckley found this bird abundant on the Nisqually Plains, about Puget Sound; and Dr. Cooper says it is common, in summer, on the prairies of the interior of Washington Territory. Dr. Cooper also found it wintering in the Colorado Valley, in considerable numbers, but all disappeared in April. He thinks they breed in Northern California, though he has never found them doing so. Dr. Newberry states that they are common in the Sacramento Valley, both in the summer and in the fall. It was found by Mr. Boucard, in winter, near Oaxaca, Mexico.

Their song is a very simple and pleasant succession of soft notes, resembling that of the Canary, but thinner and feebler. It is begun early in the morning and continued a few hours, and then renewed at sunset and kept up often until after dark. It is also not unlike the song of the Song Sparrow, but is neither so varied nor so loud and strong. It continues to sing until late in the season.

They feed in the road, eating insects, seeds, and grain. They are fond of searching also in ploughed fields, and keep principally upon the ground, exclusively so when they are searching for their food.

Although as unsuspicious as the Song Sparrow or the Chipping Sparrow, this Finch rarely, like them, comes about the house for crumbs of bread, but seems to prefer to forage for itself in the fields and by the roadside. Taken from the nest, these birds may be readily tamed, and soon become very interesting and familiar little pets, though Nuttall states that where several are thus kept they become very jealous of each other, and quarrelsome.

Their nest is always placed upon the ground, and is very simply constructed of dry stems of grasses, with no other lining than soft fine materials of the same. They have two, and sometimes three, broods in a season. When their nest is approached, they make use of various artifices to draw away the intruder, and often vary their devices in a very striking manner. In May, 1836, crossing a field within a few rods of my home in Roxbury, I nearly stepped upon a female sitting upon her nest. She immediately tumbled forward towards me, counterfeiting the most extraordinary lameness, so much so that I supposed that I had really stepped upon and severely injured her. I stooped to pick up what I supposed to be a wounded bird, and found her nest and four eggs. Visiting her nest again, as I approached she flew from it quietly and silently, and immediately began the same manoeuvres, at some little distance from her nest, which she discontinued as soon as she noticed that I was examining her treasures. These devices she

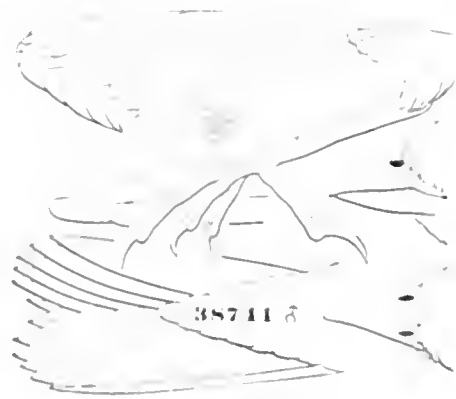
varied several times in a very remarkable manner. In Massachusetts I have known this species to have its complement of eggs by the 15th of April.

The eggs of this species are usually five, often four, and rarely six in number. They are of an oblong-oval shape, the smaller end but slightly more pointed than the other. They vary greatly in size, ranging from .90 to .80 of an inch in length, and averaging about .65 in breadth. Their ground-color is a pale greenish-white, marked with spots, lines, dots, and blotches of various shades of reddish and purplish brown. In some eggs the spots are few and small, chiefly confluent in a ring about the larger end, while the ground-color is very plainly distinguishable. In others the ground is nearly concealed by the abundance of the spots.

GENUS **COTURNICULUS**, BONAP.

Coturniculus, BONAP. Geog. List, 1838. (Type, *Fringilla passerina*, WILS.)

GEN. CHAR. Bill very large and stout, (except in *C. lecontei*); the under mandible



Coturniculus passerinus

broad, but lower than the upper, which is decidedly convex at the basal portion of its upper outline. Legs moderate, apparently not reaching to the end of the tail. The tarsus appreciably longer than the middle toe; the lateral toes equal, and with their claws falling decidedly short of the middle claw; the hind toe intermediate between the two. The wings are short and rounded, reaching to the base of the tail; the tertiaries almost as long as the primaries; not much difference in length in the primaries, although the outer three or four are slightly graduated. The tail is short and narrow, shorter than the wing

(except in *C. lecontei*), graduated laterally, but slightly emarginate; the feathers all lanceolate and acute, but not stiffened, as in *Ammodramus*.

This genus agrees with *Passerculus* in the short and narrow tail. The wings are much shorter and more rounded; the feet shorter, especially the middle toe, which is not as long as the tarsus. The tail-feathers are more lanceolate. The bill is much larger, and more swollen at the base.

The essential characters of this genus consist in the swollen convex bill; the short toes, compared with the tarsus; the short and rounded wings; and the very small, narrow, slightly graduated tail, with its lanceolate acute feathers except in the South American *C. maninba*.

In some respects there is a resemblance to *Ammodramus*, in which, however, the bill is very much more slender; the wings still shorter, and more rounded; the tail-feathers much stiffer, and even more lanceolate; the toes extending beyond the tip of the tail; the middle toe rather longer than the tarsus, instead of considerably shorter.

C. lecontei has the same general form, but a much smaller bill.

Synopsis of Species.

COMMON CHARACTERS. Crown and back streaked with black upon an ashy, olive, or chestnut ground; beneath whitish, tinged across the breast with ochraceous or ashy, plain, or with blackish streaks on the breast. A light superciliary stripe.

A. Tail-feathers attenuated, acute at ends, much graduated. On the crown a median light stripe.

a. A dusky streak on each side of the throat, and one above the light ochraceous maxillary stripe.

1. **C. henslowi.** Bill very robust, .35 along culmen by .30 deep at base. Wing, 2.25; tail, 2.20. Head ochraceous or greenish olive, lighter on the throat; a blackish stripe on each side of the crown. Breast streaked with black at all ages. *Hab.* Eastern Province of United States.

b. No dusky streak on side of throat nor above the maxillæ.

2. **C. lecontei.** Bill very narrow, only .16 broad by .20 deep at base. Median stripe of the crown ochraceous for anterior third, the remaining part ashy-white; superciliary stripe wholly ochraceous; edge of wing white; breast sparsely streaked in the adult. Wing, 2.15; tail, 2.20. *Hab.* Plains west of the Missouri, from Texas to Dakota.

3. **C. passerinus.** Bill robust, .23, or more, broad, by .24, or more, deep at base. Median stripe of the crown ochraceous throughout; superciliary stripe yellow anteriorly, ashy posteriorly; edge of wing bright yellow, breast unstreaked in the adult, streaked in the young, in which the head stripes are ashy, with no yellow on wing or over lore.

Colors dark, the black markings predominating above. *Ad.* Anterior lower parts deep buff at all seasons. *Juv.* Dusky streaks on breast very distinct. Bill, .33 and .30; wing, 2.60; tail, 1.90. *Hab.* Eastern Province of United States, and West Indies var. *passerinus*.

Colors pale, the light markings predominating above. *Ad.* Buff of the breast scarcely observable in summer. *Juv.* Dusky streaks on breast scarcely appreciable. Bill, .33 and .24; wing, 2.60; tail, 1.90. *Hab.* Western Province of United States var. *perpallidus*.

B. Tail-feathers broad, rounded at ends; only slightly rounded. Crown not divided by a median stripe.

4. **C. manimbe.** Head clear ashy, whitish on throat; crown uniformly streaked with black. Supra-oral streak and edge of wing bright yellow. No streaks on breast in adult.

Breast tinged with ashy; black streaks on upper parts much narrower than the intervening ones of the ashy ground-color; dorsal feathers rufescent-umber medially, edged with ashy, and with a shaft-streak of black. Wing, 2.35; tail, 2.00. *Hab.* Brazil var. *manimbe*.

Breast tinged with ochraceous; black streaks on upper parts much broader than the ashy ones of the ground-color; dorsal feathers black, edged with ashy; wing, 2.25; tail, 1.90. *Hab.* Buenos Ayres and Uruguay var. *dorsalis*.

Coturniculus henslowi, BONAP.**HENSLOW'S BUNTING.**

Emberiza henslowi, AUD. Orn. Biog. I, 1831, 360, pl. lxxvii. — In. Syn. 1839, 101. — In. Birds Am. III, 1841, 75, pl. clxiii. — NUTTALL, Man. I, 1832, App. *Coturniculus henslowi*, BON. List, 1838. — In. Conspectus, 1850, 481. — BAIRD, Birds N. Am. 1858, 451. — MAYNARD, Birds E. Mass. 1870, 117. — SAMUELS, 306. *Prinapilla henslowi*, NUTTALL, Man. I, (2d ed.,) 1840, 571.

SP. CHAR. Upper parts yellowish-brown, the hood, neck, and upper parts of back



Coturniculus passerinus.

tinged with greenish-yellow. Interseapular feathers dark brown, suffused externally with bright brownish-red; each feather with grayish borders. Tertiaries, rump, and tail-feathers abruptly dark chestnut-brown, darkest centrally, paler externally, and narrowly margined with gray. Crown with a broad black spotted stripe on each side; these spots continued down to the back. Two narrow black mandibular stripes and one post-ocular on each side of the head, and an obscure black crescent or spot behind the auriculars. Under parts light brownish-yellow, paler on the throat and abdomen. The jugulum, upper part of the breast, and the sides of the body, conspicuously streaked with black. Edge of wing yellow. A strong tinge of pale chestnut on the wings and tail. The median tail-feathers and upper coverts chestnut or rufous

brown, with sharply defined shaft-streaks of black. Length, 5.25; wing, 2.15; tail, 2.15.

HAB. Eastern United States as far north as Massachusetts; westward to the Loup Fork of Platte.

This species is related to *C. passerinus*, but readily distinguished by the well-marked stripes on breast and sides, the greenish-yellow, not chestnut-brown, of head and nape, and the two mandibular dusky stripes. The middle tail-feathers are reddish with only a very narrow sharply defined median shaft-streak of black, instead of having the greater portion of the centre dusky with scalloped edges. I have not seen young birds, but they probably differ little from the adults.

HABITS. The history and general distribution of Henslow's Bunting is still somewhat imperfectly known. Mr. Audubon first met with it, in 1820, in Kentucky, nearly opposite to Cincinnati. It was seen on the ground, amongst the tall grass, and is said to have exhibited all the peculiarities of this tribe. He was afterwards informed that this bird is abundant in the State of New Jersey, and that it breeds there; and in evidence of this he mentions receiving a specimen from Dr. Trudeau, obtained by that gentleman himself. Mr. Audubon also mentions that both Dr. Bachman and he have procured a great number in South Carolina, where they abound, in the latter part of autumn, and where, also, a portion remain during the winter. In Florida, Mr. Audubon again met with these birds in the winter. They

were in great numbers in all the pine barrens of that State, in light and sandy soil, and in woods but thinly overgrown by tall pines. They never alight on trees, but spend their time on the ground, running with great rapidity through the grass, in the manner of a mouse.

In New Jersey they were found in ploughed fields, where they are presumed to have been overlooked and mistaken for the Yellow-winged Sparrow. Mr. Audubon supposed that they were not found farther eastward than that State.

Specimens in the Smithsonian collection have been procured in Georgia in December; in Maryland in July; at Fort Riley, Kansas, Southern Illinois, and in Nebraska, in June.

In Massachusetts they are regular summer visitants, though as yet they have been met with in only a few instances and in a somewhat restricted locality. They are now met with nearly every year, and several nests have been taken. Mr. Maynard obtained two specimens, May 10, in a wet meadow in Newton. Their song-note he describes as like the syllables *see-wick*, the first syllable prolonged, the latter given quickly. This bird was first obtained in Berlin, in that State, by Mr. E. S. Wheeler, who discovered its nest and eggs. It was mistaken for Bachman's Finch, and was at first so placed on the record, though the error was immediately corrected. Since then, in that town, and in one or two others in its neighborhood, other nests have been met with. Mr. William Brewster obtained several specimens in Lexington, May 14, 1872. It is quite probable that it has been confounded with *C. passerinus*, and it is now supposed to be more common in the eastern part of the State than that bird.

One specimen of this Bunting was taken near Washington, during the summer season, from which circumstance Dr. Cones gives it as an exceedingly rare summer resident of the District of Columbia.

In 1871, Mr. Ridgway ascertained that, so far from being rare, Henslow's Bunting is very abundant on the prairies of Southern Illinois, as well as the Yellow-winged species, but far exceeding the latter in numbers. Though entirely similar to that bird in habits and manners, it may be readily distinguished by its note, which is said to be an abrupt *pil-lut*, much more like the common summer-call of the Shore Lark than the lisped grasshopper-like chirp of the *C. passerinus*, and to be uttered as the bird perches on the summit of a tall weed, the tail being depressed, and the head thrown back at each utterance. A number of unidentified eggs were sent to me several years since, by Mr. Kennicott, from near Chicago. They resembled somewhat the eggs of *C. passerinus*, but were not the eggs of that species. I have now no doubt they belonged to this bird.

The nest is built in the ground, in a depression, or apparently an excavation scratched out by the bird itself, and is a well-made structure of coarse, dry, and soft reeds and grasses, well lined with finer materials of the same description. The eggs, five or six in number, somewhat resemble those of

the *C. passerinus*. Their ground-color is a clear bright white, and they are spotted with well-defined reddish-brown markings, and more subdued tints of purple. The markings, so far as I have seen their eggs, are finer and fewer than those of *C. passerinus*, and are distributed more exclusively around the larger end. The eggs measure .78 by .60 of an inch, and are of a more oblong-oval than those of the common Yellow-Wing.

Coturniculus lecontei, BONAP.

LECONTE'S BUNTING.

Emberiza lecontei, AUD. Birds Am. VII, 1843, 338, pl. cccclxxxviii. — MAX. Cab. Jour. VI, 1858, 340. *Coturniculus lecontei*, BON. Conspectus, 1850, 481. — BAIRD, Birds N. Am. 1858, 452.

SP. CHAR. Bill much more slender than in *C. henslowi*. First quill the longest, the rest diminishing rapidly. Tail emarginate and rounded, with the feathers acute. Upper parts light yellowish-red, streaked with brownish-black; the margins of the feathers and scapulars pale yellowish-white. Tail-feathers dusky, margined with light-yellowish. Lower parts, with the cheeks and a broad band over the eyes, fine buff. Medial line yellowish anteriorly, nearly white behind. The buff extending to the femorals and along the sides, streaked with brownish-black. Throat, neck, and upper parts of the breast, without any streaks, and plain buff. Length, 4.40; wing, 2.13; bill along ridge, .37; edge, .50. Legs flesh-color; bill dark blue.

HAB. Mouth of Yellowstone, to Texas.

Since the regret expressed in the Birds of North America (1858) at the loss of the single specimen known of this species, another has been received by the Smithsonian Institution from Washington Co., Texas, collected by Dr. Linnecum. It is in very poor condition, having been skinned for an alcoholic preparation, and does not admit of a satisfactory description of the colors. In its unspotted breast, the rufous feathers of the hind neck, the absence of maxillary stripes, and apparently in the markings of the wings, it is most like *C. passerinus*. Although the inner tail-feathers have the narrow stripe of *henslowi*, the bill is much smaller, as stated by Audubon, than in the others, and is apparently bluish, not yellow. The vertical stripe is deep buff anteriorly, and pale ashy posteriorly, instead of buff throughout, and the superciliary stripe is continuously buff, instead of yellow anterior to, and ashy behind, the eye. In the comparative length of wing and tail, it is most nearly related to *henslowi*, but the bill is very much narrower than in either. Upon the whole, there can be no doubt of its actual specific distinctness from both its allies.

HABITS. Leconte's Sharp-tailed Sparrow was procured by Audubon in his expedition to the Yellowstone. He speaks of its having very curious notes, which he describes as of a sharp, querulous nature, and a general habit of keeping only among the long, slender green grasses that here and there grew up in patches along the margins of the creeks. So closely did it keep

in the coverts to which it resorted, that it was very difficult to force it to rise on the wing, when only it could be procured. Mr. Audubon did not meet with its nest or young, and they remain unknown.

This type specimen was presented by Audubon to Professor Baird. A second was sent to the Smithsonian Institution, from Texas, by Dr. Lincecum.

Coturniculus passerinus, BONAP.

YELLOW-WINGED BUNTING.

Fringilla passerina, WILSON, Am. Orn. III, 1811, 76, pl. xxvi, f. 5. — AUD. Orn. Biog. II, 1834, 180; V, 497, pl. cxxx. *Fringilla (Spiza) passerina*, BON. Obs. Wils. 1825, No. 111. *Coturniculus passerina*, BON. List, 1838. — IB. Conspectus, 1850, 481. — BAIRD, Birds N. Am. 1858, 450. — SAMUELS, 305. *Emberiza passerina*, AUD. Syn. 1839. — IB. Birds Am. III, 1841, 73, pl. clxii. *Fringilla sasanarum*, (GM.) NUTTALL, Man. I, 1832, 494. — IB. (2d ed.) 1840, 570. — (GMELIN, Syst. Nat. I, 1788, 921?) ?? *Fringilla caudata*, LATH. Ind. Orn. I, 1790, 459. — NUTT. Man. I, 1832, 505. ? *Passerina pratensis*, VIEILLLOT. *Coturniculus tixierus*, GOSSE.

LOCALITIES: Oaxaca, March (SCL. 1859, 379). Guatemala (SCL. Ibis, I. 18). Cuba (winter, common, CAB. Journ. IV, 7). Costa Rica (CAB. Journ. VIII, 1860, 411; LAW. IX, 103). Vera Cruz (winter, SUM. Mem. Bost. Soc. I, 552).

SP. CHAR. Feathers of the upper parts brownish-rufous or chestnut-brown, margined narrowly and abruptly with ash-color; reddest on the lower part of the back and rump; the feathers all abruptly black in the central portion; this color visible on the interseapular region, where the rufous is more restricted. Crown blackish, with a central and superciliary stripe of yellowish tinged with brown, brightest in front of the eye. Bend of the wing bright yellow; lesser coverts tinged with greenish-yellow. Quills and tail-feathers edged with whitish; tertiaries much variegated. Lower parts brownish-yellow or buff, nearly white on the middle of the belly, darkest on the jugulum. The feathers of the upper breast and sides of the body with obsoletely darker centres, these sometimes wanting. Sides of breast against bend of wing with a few black streaks, usually concealed. Length about 5 inches; wing, 2.40; tail, .200.

HAB. Eastern United States; south to Guatemala; Jamaica, resident; Porto Rico.

The young of this species have the jugulum and sides of the breast streaked with black, much more distinct than in the adult, and exhibiting a slight resemblance to *C. henslowi*. The upper parts are less varied.

Specimens from the Far West have the bill more slender, the reddish of the back considerably paler, the dark markings of the back restricted, the light stripe on the head with scarcely any yellow, a decided spot in front of the eye quite yellow, and little or no ochraceous on the breast.

The young bird, with streaked jugulum, may be most readily distinguished from *C. henslowi* by the grayer plumage without any shade of chestnut or greenish-yellow, the sparseness of streaks on the side, the absence of the two mandibular dusky stripes, and the broad dusky centres of the middle tail-feathers.

Quite a fine series of specimens from Jamaica and other West India Islands affords ample material to judge of the validity of the *C. tixierus* of

Gosse. It is scarcely possible to distinguish these Jamaican specimens from examples from the Eastern Province of the United States, though minute differences are observable. Their size is somewhat smaller, but they are resident in the region where obtained; and the shades of color are just appreciably darker. There are, however, no differences sufficient to justify retaining the name *tibialis*, to designate even a variety.

All the specimens in the collection from Mexico and Guatemala are in the autumnal or winter dress, so that it is probable that they are not resident there; they appear to be identical with North American specimens, and referable to the variety *passerinus* as restricted.

Between summer and winter specimens great differences are observable: in the former season the edges of the feathers become worn, so that often the chestnut spots disappear entirely, while the other markings become poorly defined, leaving the black blotches predominant.

HABITS. The common Yellow-winged Sparrow appears to be a bird of irregular and unequal distribution, found in certain localities in great abundance, and not seen in the intervening districts. According to some writers, it is partial to sandy places near the sea, and this is certainly true of the neighborhood of New York City, and also of a large portion of the New Jersey coast. It is likewise the case in certain portions of Eastern Massachusetts, as, according to Mr. Maynard, this species is very numerous in Nantucket, where it breeds abundantly. I have never met with this Sparrow in Massachusetts, except in a single instance, near Boston, nor in any collections of eggs have I seen any that I supposed could be those of this species; yet in the western part of the State, according to Mr. Allen, it is an abundant summer visitant, arriving there about the first week in May, and leaving early in September, breeding in dry fields and pastures, and raising two broods in a season. According to Mr. Boardman, it is an occasional visitant in the neighborhood of Calais, yet rare; arriving there the first of April, five weeks earlier than it shows itself in Springfield. Yet that this bird has ever been met with between Boston and Calais does not appear. It was not seen in Western Maine by Professor Verrill.

In the vicinity of Hartford, Conn., this bird appears also to be a not uncommon summer resident. In 1860, I received from Mr. T. S. Brandigee several nests found in that neighborhood. They were all constructed on the ground, in a field of thin grass, and their tops were all nearly covered over.

Dr. Heermann states that he found this bird a not uncommon species, in the summer season, near San Antonio; and Mr. Dresser also procured a specimen there in the early summer. Dr. Lincecum mentions it as a common resident in Washington County, in the same State. He describes it as a close-hiding Grass Sparrow running on the ground in the manner of a mouse, and never seen to alight on trees. Dr. Cones speaks of it as a resident species in South Carolina, especially abundant during the period of migration.

It has been found quite common, during the winter months, in Central America, specimens having been procured there by Señor Constancia, Mr. Skinner, and Dr. Van Patten. It was also found at Oaxaca, Mexico, by Mr. Boucard.

Mr. Nuttall and Mr. Audubon speak of it as occurring in Oregon, but Dr. Cooper did not meet with it on the Pacific coast. Dr. Kennerly obtained a single specimen on one of the forks of the Colorado, in February. Mr. Ridgway met with the western form of this species, in suitable places, in the Sacramento Valley and the Great Basin, and proposes for it the name of *per-pallidus*.

In the vicinity of Newark, N. J., I have found this species apparently one of the most abundant in that neighborhood, having obtained there in the month of June more eggs of this than of any other species.

In Northfield, Ill., near the lake shore, Mr. Robert Kennicott met with the nests of these birds in great abundance. From these facts I infer that it is not necessarily or exclusively a bird of the sea-shore, but that in certain favorable localities it is as abundant in the interior as on the coast, and that at intervals it may be met with from Texas to Maine, and from the Atlantic to the interior, nearly or quite to the Pacific coast.

In Jamaica, Mr. March states, this species is not uncommon in the savannas and grass lands near Spanish Town. It is a resident in that island, and breeds there in considerable numbers, nesting in tufts of grass-roots. It is only common in certain localities.

I have never heard its note to know it. Wilson speaks of it as a short, weak, interrupted chirp. According to Mr. Ridgway, it bears a close resemblance to the note of a grasshopper. Nuttall says they sing in an agreeable voice, something like that of the Purple Finch, though less vigorously; and Audubon characterizes it as an unmusical ditty, composed of a few notes weakly enunciated at intervals.

It is terrestrial in its habits, living, nesting, and feeding on or near the ground. It subsists on larvæ, insects, and the seeds of grasses and small weeds.

This bird builds its nest on the ground, usually in a small tuft of grass or in a cluster of plants. It is made of dry grasses, and is lined with fine bent and horsehair. The young are said to follow their parents for a short time, but soon separate, and learn to take care of themselves. This species is not gregarious, and is never seen in flocks, not even when just about to migrate.

Wilson and Nuttall describe the eggs as grayish-white, sprinkled with brown. Audubon says they are dingy-white, sprinkled with brown spots. This is not accurate. The ground-color is a clear crystalline white, beautifully dashed and marbled with bold markings of an almost golden brown. These spots vary in size, are often quite large, and occasionally make a corona about the larger end. The eggs are of a rounded oval, almost spherical, shape, measuring .75 by .63 of an inch.

Coturniculus passerinus, var. perpallidus, RIDGWAY.**WESTERN YELLOW-WINGED BUNTING.**

Coturniculus passerinus, var. *perpallidus*, RIDGWAY, Report of U. S. Geol. Expl. 40th Par.
Coturniculus passerinus, COOPER, Orn. Cal. I, 189.

SP. CHAR. *Adult* (No. 58,695 ♂, Antelope L. Great Salt Lake, June 4, 1869; U. S. Geol. Expl. 40th parallel) similar to var. *passerinus*, but the light tints above prevailing, the ground a pale ash-color, and the chestnut spots in excess of the black ones. Specks on the nape very minute. Bill tinge to cheeks, throat, and jugulum so faint as to be scarcely appreciable. Wing, 2.60; tail, 1.90; bill, .33 from frontal feathers by .24 in depth at base; tarsus, .70. *Young* (No. 53,942 Ruby Valley, Nev., July 22, 1868) differing from young of var. *passerinus* in a predominance of the light, instead of the dark, markings on upper surface, streaks across breast so faint as to be just appreciable, instead of distinct, and nearly black.

HAB. Western Province of United States, from eastern base of Rocky Mountains to the Pacific.

This very appreciably different race replaces the restricted var. *passerinus*, in the Western Province of the United States. In its paler colors and much more slender bill than its eastern representative, it agrees with *Passerculus alaudinus*, *Pooecetes confinis*, etc., as compared with *P. savanna*, *P. gramineus*, etc. It is to this race that the biographical notes in the preceding article refer, as far as based on western specimens.

GENUS AMMODROMUS, SWAINSON.

Ammodromus, SWAINSON, Zool. Jour. III, 1827. (Type, *Oriolus orudacutus*, GM.)

GEN. CHAR. Bill very long, slender, and attenuated, considerably curved towards the tip above. The gonys straight. A decided lobe in middle of cutting edge of upper bill. The legs and toes are very long, and reach considerably beyond the tip of the short tail. The tarsus is about equal to the elongated middle toe; the lateral toes equal, their claws falling considerably short of the base of the middle one; the hind claw equal to the lateral one. Wings short, reaching only to the base of the tail; much rounded; the secondaries and tertials equal, and not much shorter than the primaries. The tail is rather shorter than the wings, and graduated laterally; each feather stiffened, lanceolate, and acute.

Color. Streaked above and across the breast; very faintly on the sides.



Ammodromus orudacutus

The essential characters consist in the slender and elongated bill; the long legs reaching considerably beyond the tail, with the lateral claws falling considerably short of the middle one; and the very short rounded wings, rather longer than the cuneate tail, with its stiffened and lanceolate feathers.

COMMON CHARACTERS. Above olivaceous or ashy, the crown washed with brown laterally, the dorsal feathers darker centrally; beneath white, tinged across the jugulum with ochraceous or ashy; jugulum streaked; a dusky "bridle" on each side of throat; above it a maxillary stripe of ochraceous or white.

1. *A. caudacutus*. *Ad.* Above olive, the dorsal feathers darker and edged with whitish-ochraceous; superciliary and maxillary stripes deep ochraceous; jugulum and sides tinged with the same, and sharply streaked with black. *Juv.* Wholly ochraceous, darker above; crown and back streaked with black, the former divided medially by a pale-brown stripe; breast and sides streaked with black. *Hab.* Atlantic coast of United States.

2. *A. maritimus*. *Ad.* Above ashy, the dorsal feathers obsoletely darker centrally; superciliary stripe yellowish-ashy, bright yellow over the lores; maxillary stripe white; jugulum and sides tinged with ashy, the former obsoletely streaked with dark ashy. *Juv.* Above olivaceous, the crown and back streaked with black, the former not divided by a lighter median line; breast and sides washed with ochraceous and distinctly streaked with black. *Hab.* Atlantic coast of United States.

Ammodromus caudacutus, SWAINSON.

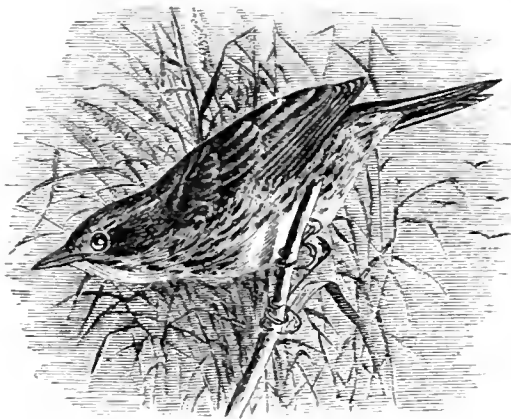
SHARP-TAILED BUNTING.

Oriolus caudacutus, GMELIN, I, 1788, 394. — LATHAM, *Ind. Orn.* I, 1790, 186 (not *Fringilla caudacuta*, LATH.). *Fringilla caudacuta*, WILSON, *Am. Orn.* IV, 1811, 70, pl. xxxiv, f. 3. — AUD. *Orn. Biog.* II, 1834, 281; V, 499, pl. cxlix. *Fringilla (Spiza) caudacuta*, BON. *Syn.* 1828, 110. *Passerina caudacuta*, VIEILLOT. *Ammodromus caudacutus*, SWAINSON, *Birds*, II, 1837, 289. — AUD. *Synopsis*, 1839, 111. — *ib.* *Birds Am.* III, 1841, 108, pl. clxxiv. — BONAP. *Conspectus*, 1850, 482. — BAIRD, *Birds N. Am.* 1858, 453. — SAMUELS, 307. *Fringilla littoralis*, NUTTALL, *Man.* I, 1832, 504 (2d ed. 1840, 590). *Sharp-tailed Oriole*, PENNANT, *Arctic Zool.* II, 261, New York.

SP. CHAR. Upper parts brownish-olivaceous. Head brownish, streaked with black on the sides, and a broad central stripe of ashy. Back blotched with darker; edges of interseapular feathers and inner secondaries whitish, just exterior to a blackish suffusion. A broad superciliary and maxillary stripe, meeting behind the ashy ear-coverts, and a band across the upper breast, buff-yellow. The sides of the throat with a brown stripe; the upper part of the breast and the sides of the body streaked with black; rest of under parts whitish. Edge of wing yellowish-white. Bill yellowish below; dusky above. The female appears to have more buff on the breast than the male. Length, 5 inches; wing, 2.30.

Hab. Atlantic coast of the United States.

The young is of a more yellowish tinge above and below; the streaks on the back more conspicuous; the scapular feathers without the whitish edging.



Ammodromus caudacutus.

In autumnal and winter specimens the buff tints are much deeper than in

spring; the sides of the crown, as well as the dark markings on the back, more intensified, and in greater contrast with the lighter ashy and olive tints.

HABITS. The Sharp-tailed Finch is one of the most striking and well-characterized of land-birds, and as peculiar to the sea-shore as the *Tringa*. In habits it very closely resembles the whole family of Waders in many striking respects. Like them it feeds upon small crustaceans and minute marine insects, keeping about the water's edge, walking upon the floating weeds and other substances raised by the tide, preferring this mode of life to a more inland residence, and only resorting to the uplands to feed upon the seeds of grasses and sedges when their food fails them at the water's edge.

Dr. Coues is of the opinion that this bird does not breed in the neighborhood of Beaufort, N. C., and that it leaves for the North in May, having a more northern habitat than *A. maritima*. He does not coincide with those who detect a resemblance between the actions of the *Ammodrami* and of the Sandpipers. He thinks the manner in which they climb the reeds, slide up and down, and hang from them in various attitudes, is more like that of Nuthatches and Titmice. On the ground they seem to him unmistakably sparrow-like.

This Sharp-tailed Finch is abundant along the coasts of Connecticut and Rhode Island, and is also found in Massachusetts, though sparingly, and only in a few congenial localities. In the marshes of Charles River, near Boston, this species is occasionally common in the breeding-season. In the summer of 1869, Mr. H. W. Henshaw found quite a number of their nests. Mr. Maynard has also taken it among the marshes of Ipswich, which is probably about its extreme northern limit. It has not, so far as I am aware, been traced to Maine. In these localities it probably raises two broods in a season, as it appears there in May, and remains until into October. They are eminently terrestrial, run on the ground like mice, are difficult to flush, and can only be shot while on the wing. They lie close to the ground, and conceal themselves in the grass.

They are also very numerous in the marshes in the neighborhood of New York, and especially so in New Jersey, breeding along that coast to Cape May. How much farther south than this they are found I cannot state, but I did not meet with any at Cape Charles, where the *maritimus* was very abundant.

In the winter this species is found in large flocks along the shores of South Carolina and Georgia. Mr. Audubon, however, did not find any in Florida. In the marshes near Charleston they are found in immense flocks, so much so that Audubon has known of forty being killed at a single shot. They search in the sedgy marshes for their food when the tide is out, and, on the approach of the returning waters, retreat to the higher shores and to the rice embankments.

The flight of this species is quite different from that of any other bird, and by it they may at once be recognized. In flying, they also drop their tails very low.

Mr. Audubon states that during the winter the Sharp-tailed Finch is furnished with an extra quantity of feathers on the rump, for which he finds it difficult to account.

These birds are essentially maritime, are found only in the vicinity of the sea, and always keep immediately about the water, except when the inclemency of the weather drives them to the high grass of the uplands for shelter. They walk and run, or remain feeding on the floating weeds and other substances raised by the tide, with all the ease and fearlessness with which they move on the land. They are gregarious in the winter, and in the Southern marshes are found feeding in companies. During the breeding-season they keep more in pairs, and are found more isolated. At this time they are also shy, and difficult to detect. Their usual call-note is only a single *tweet*, and in the love-season their series of twitters Mr. Audubon thinks hardly worthy to be called a song. They feed indiscriminately on seeds, insects, small crustaceans, and various forms of refuse matter floated or thrown up by the tides.

On the coast of New Jersey, where these birds are found in the greatest abundance, they have at least two broods in a season. Their nest is on the ground, in a small tussock of grass or sedges, but little removed from the reach of the tide, and is placed in a depression apparently excavated for the purpose. They are loosely made of soft and slender grasses, arranged in a circular form. The nest is large for the bird, spacious and deep, and is softly lined with finer and similar materials.

Their eggs, five or six in number, are of a somewhat rounded oval shape, having an average breadth of .59 of an inch, and vary in length from .78 to .70. Their ground-color is a light green, occasionally a dull white, with hardly a perceptible tinge of greenish, thickly sprinkled equally over the entire egg, with fine rusty-brown dots. These are of various sizes, but all fine. In a few the larger dots are confluent in a ring around the larger end; in others, the finer dots are so small as to be only distinguishable under a glass, concealing the ground-color, and giving to the egg an almost uniform rusty color. These eggs vary but little in shape, and are nearly equally rounded at either end, though never entirely so.

Ammodromus maritimus, SWAINSON.**SEASIDE BUNTING.**

Fringilla maritima, WILSON, Am. Orn. IV, 1811, 68, pl. xxxiv, f. 2. — AUD. Orn. Biog. I, 1831, pl. xciii. *Ammodromus maritimus*, SW. Zool. Jour. III, 1827, 328. — BONAP. List, 1838. — IR. Consp. 1850, 482. — AUD. Synopsis, 1839, 110. — IR. Birds Am. III, 1841, 103, pl. clxxii. — BAIRD, Birds N. Am. 1858, 154. — SAMUELS, 308. *Fringilla (Ammodromus) maritima*, NUTT. Man. I, (2d ed.) 1840, 592. *Fringilla macgillivrayi*, AUD. Orn. Biog. II, 1834, 285; IV, 1838, 391; V, 1839, 499, pl. ccely. *Ammodromus macgillivrayi*, BON. List, 1838. — IR. Conspectus, 1850, 482. — AUD. Syn. 1839. — IR. Birds Am. III, 1841, 106, pl. clxxiii. *Fringilla (Ammodromus) macgillivrayi*, NUTTALL, Man. I, (2d ed.) 1840, 593.

SP. CHAR. Above olivaceous ashy-brown; nearly uniform, but with the centres of interscapular feathers darker and edged faintly with paler; very obsoletely, almost inappreciably streaked elsewhere, especially on the head, which has a faintly defined median stripe of purer ashy. Beneath white; the breast and sides and under tail-coverts with rather indistinct streaks of dark ashy-brown, tending to form a large spot in centre of breast; an ashy mandibular stripe continued into the ashy sides of neck, and cutting off and enclosing a white stripe above it. A spot of yellow anterior to eye, continued over it as an almost inappreciable grayish stripe. Edge of wing sulphur-yellow. Bill lead-color; feet dusky. Length about 6 inches; wing, 2.50. In autumn the breast and sides tinged with fulvous; the back with rufous.

Young birds (*A. macgillivrayi*?) have markings much more distinct, and closely resemble *A. caudacuta*, though larger. They will be most readily distinguished by the absence of the fulvous superciliary stripe.

HAB. Atlantic sea-coast of United States, northward to Long Island Sound.

The same seasonal differences in coloration are observable in this species as in *A. caudacuta*.

HABITS. The Seaside Finch has very nearly the same distribution, habits, and manners of life, as the Sharp-tailed species, and the description of these in one would answer almost equally well for the other. There are, however, certain shades of difference in several respects to be observed.

This bird is, if anything, more southern in its distribution than the other, and does not extend its visits in summer so far north. While the Sharp-tailed Finch is not an uncommon bird on the shores of the New England States, as far to the north as Ipswich, the Seaside Finch is comparatively rare, much more so now than it was formerly. Mr. Maynard states that he has searched carefully for it from the Merrimack to the extreme southern shores of Massachusetts without finding any specimens, nor could he find any on the island of Nantucket, a very natural and congenial locality. Dr. Cones states that it is abundant on the New Hampshire coast, but recent endeavors have failed to detect it. In 1836 and 1837 a few isolated pairs built in the marshes of Stony Brook, near Boston, above tide-water, nesting not on the ground, but in low bushes. They were identified by Mr. Audubon.

In the summer of 1852 I found this species very abundant on the low sandy islands of Cape Charles, Va. There, in every instance, their nests

were in low bushes, about a foot from the ground. They were the only land-birds found on these islands.

Rev. C. M. Jones informs me that at Madison, Conn., on the coast, the Seaside and the Sharp-tailed Finches occur in about equal numbers in the salt marshes. He was not able to observe any specific difference in their mode of nesting, except that the *maritimus* seemed to be more common in that part of the marsh nearest the shore, while the *caudacutus* was more abundant farther back towards the highlands, though this was not the invariable rule. He sometimes found the nests suspended in the salt grass, the latter being interwoven with the other materials. In all such cases the entrance was on the side of the nest, in the manner of the Marsh Wren. At other times he found the nest placed under a quantity of lodged grass, but resting on a portion still lower. In such cases it is generally open at the top. He has also found them on the ground, and, when thus placed, always much more bulky than when built as above, a considerable quantity of dead grass being laid down to keep the nest above the wet, though not always with success. On Cobb's Island, Va., Mr. Jones only found the *maritimus*, the nests of which were in bushes, from one foot to eighteen inches from the ground.

The call-note of this species is said to be a monotonous chirp, and its song hardly to deserve that name. The notes of which it is composed are few, and have neither variety, emphasis, nor attractiveness.

Dr. Coles states that this Finch begins to sing when mating, and is afterwards, during the incubating, particularly earnest and persevering about it. Each pair usually claims some particular copse, and the male usually has his favorite singing-post, to which it continually resorts. He adds that its simple song is something like that of the Yellow-shouldered Sparrow, beginning with a few slow notes, then a rapid trill, finally slurred, till it sounds like the noise made by some of the grasshoppers.

These birds are at all times shy and difficult to be approached. When their nest is visited, the parents leave it and secrete themselves, and cannot be traced without great difficulty. When thus hidden, they will almost suffer themselves to be trodden upon before they will fly up.

Mr. Audubon thinks they have two broods, their first being hatched out early in June. Their nests, he states, are usually placed next to the ground, but not sunk in it. Their food consists of marine insects, small crabs, and snails, as well as small sand-beetles and seeds. Their flesh has a rank, unsavory flavor, so much so that, having had some made into a pie, he could not eat it. He states also that they are resident in the Southern States, and are found along the Gulf coast as far as Texas.

The nest is strongly but coarsely woven of dry sedges, stems, and grasses, and is lined with similar but finer materials. The eggs are five in number, have a grayish-white ground, and are spotted and blotched with reddish-brown. The blotches are distributed over the entire egg, and are much

larger than in the *caudatus*. There is, indeed, no similarity between the two eggs. They measure .88 by .68 of an inch.

GENUS **CHONDESTES**, SWAINSON.

Chondestes, SWAINSON, Phil. Mag. I, 1827, 435. — *Ib.* Fauna Bor.-Am. II, 1831. (Type, *Chondestes striatus*, SW., equal to *Fringilla grammaca*, SAV.)

GEN. CHAR. Bill swollen, both outlines gently curved; the lower mandible as high as



the upper; the commissure angulated at the base, and then slightly sinuated. Lower mandible rather narrower at the base than the length of the gonys; broader than the upper. Tarsi moderate, about equal to the middle toe; lateral toes equal and very short, reaching but little beyond the middle of the penultimate joint of the middle toe, and falling considerably short of the base of middle claw. Wings, long, pointed, reaching nearly to the middle of the tail; the tertials not longer than the secondaries; the

first quill shorter than the second and third, which are equal. The tail is moderately long, considerably graduated, the feathers rather narrow, and elliptically rounded at the end.

Streaked on the back. Head with well-defined large stripes. Beneath white, with a pectoral spot. Only one species recognized.

Chondestes grammaca, BONAP.

LARK SPARROW.

Fringilla grammaca, SAV. in Long's Exped. R. Mts. I, 1823, 139. — *Bon. Am. Orn.* I, 1825, 47, pl. v, f. 3. — *Am. Orn. Biog.* V, 1839, 17, pl. ccxc. *Chondestes grammaca*, *Bon. East*, 1838. — *Ib.* Conspectus, 1850, 479. — *BAIRD*, Birds N. Am. 1858, 456. — *COOPER & SICKLY*, 200. — *MAYNARD*, Birds E. Mass. 1870, 112 (Massachusetts). — *COOPER*, Orn. Cal. I, 193. *Eubeciza grammaca*, *AUD.* Synopsis, 1839, 101. — *Ib.* Birds Am. III, 1841, 63, pl. clviii. — *MAX.* Cab. Jour. VI, 1858, 343. *Chondestes striatus*, SWAINSON, Philos. Mag. I, 1827, 435.

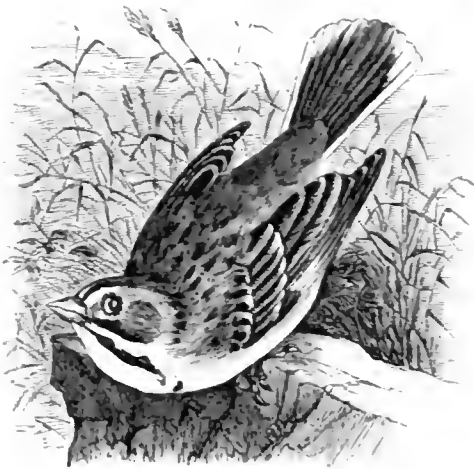
SP. CHAR. Hood chestnut, tinged with black towards the forehead, and with a median stripe and superciliary stripe of dirty whitish. Rest of upper parts pale grayish-olive, the interscapular region alone streaked with dark brown. Beneath white, a round spot on the upper part of the breast, a broad maxillary stripe cutting off a white stripe above, and a short line from the bill to the eye, continued faintly behind it, black. A white crescent under the eye, bordered below by black and behind by chestnut on the ear-coverts. Tail-feathers dark brown, the outermost edged externally and with more than terminal third white, with transverse outline of the web decreasing to the next to innermost, tipped broadly with white. Length 6 inches; wing 3.50.

HAB. From Wisconsin and Illinois (also in Michigan and Ohio) to the Pacific coast; Cape St. Lucas, south to Texas and Mexico. Oaxaca (SCL. 1859, 379); Vera Cruz (winter, SUMICHRAST, 552); Eastern Massachusetts, accidental (MAYNARD).

The colors of the female are duller than in the male, the chestnut less bright, the black not so intense; the pattern, however, is the same.

The young bird has the breast and throat with a good many spots of dark brown instead of the single large one on the breast. The other markings are more obscure.

HABITS. The Lark Finch is found from Eastern Illinois to the Pacific, and from Oregon to Texas. Within this wide area of distribution it is everywhere abundant in the open prairies and plains. It is not found in wooded regions. This bird was described by Say, and was first met with by Long's expedition to the Missouri River. It was not known to either Wilson or Audubon, and its habits were very imperfectly known to Nuttall.



Chondestes grammacus.

Mr. Dresser found this bird very abundant in Texas throughout the summer, arriving in the neighborhood of San Antonio in March, and leaving there early in October. He found their nests quite common, and usually built in a mesquite tree or bush, of fine roots and grasses. Dr. Heermann also found it abundant in New Mexico. In Arizona, Dr. Coues found it, chiefly in spring and autumn, a migrant, and, at those seasons, very numerous. Many remain during the summer to breed, and a few are found in the winter. It was met with near New Leon, Mexico, by Lieutenant Couch, but was not obtained in Vera Cruz by Sumichrast. It was taken near Oaxaca, Mexico, by Mr. Boucard. A single specimen was obtained at Fort Dalles in Oregon, by Dr. Suckley, but it was not met with by him west of the Cascade Mountains. Mr. Townsend states that he also found it in that region.

Dr. Cooper did not find this species in the Colorado Valley, though it has been obtained at Fort Yuma in December; and, as he has met with them in large flocks in the valleys of San Diego in February, he concludes that they winter in the southern part of California. They breed from San Diego throughout California, and as far north as the Columbia, where they arrive early in May. Dr. Cooper has never found their nest in California, but has frequently met with it in Kansas and Nebraska in May and June. He found them on the ground, and their nests were constructed chiefly of grass.

He speaks of them as singing very sweetly, and states that in their song they resemble the Canary more than any other bird. They frequent the open plains, usually in the neighborhood of trees, upon which they often

alight in flocks. Their food consists of the seeds of grass and other small plants, which they collect on the ground.

A single specimen of this bird was shot in Massachusetts in 1845, by Mr. Samuel J. Illson. It was taken in Gloucester, on the coast, where its appearance was, of course, purely accidental.

We are indebted to the careful observations of Mr. Ridgway for the principal portion of our knowledge of the manners and mode of life of this species, which he has recently ascertained to be an abundant summer resident in Southern Illinois. It is probably equally abundant throughout the State, and is found as far east as Ohio, where it becomes rare.

The Prairie Lark-Finch was found by that accurate observer very abundant at Sacramento, Cal., where it frequented alike the oak groves, the cottonwood and willow copses, and the weedy fields and meadows. At Sacramento it was eminently arboreal, quite in contrast with its habits as observed in Illinois. It was also met with in the interior, wherever the locality was suited to it. Near Salt Lake City it is one of the most numerous of the birds inhabiting the artemisia grounds, in the outskirts of the town, in company with *Poospiza bilineata* and *Spizella breweri*. It is called by the Utah boys the Snake-Bird, from the supposed resemblance of its striped head to that of a snake. At Sacramento it is greatly prized as a cage-bird, and young birds readily sell there for four dollars a pair. He states that the delightful song of this bird has no parallel among the North American *Fringillida*, and claims that in this respect it is pre-eminently superior to that of all the other members of this family. As it perches upon the summit of a small tree, on the telegraph wire, or upon a fence, its notes may be heard throughout the day, in the morning before those of any others, and late in the evening, when all except for this irrepressible songster is silence.

The song of this species is described as composed of regularly divided parts, almost perfect in compass, in vigor and continuity unsurpassed, if not unequalled, by any other North American species. It begins with a series of chants, the style reminding one somewhat of the *Cyanospiza cyanea*, but each syllable loud, rich, and clear, and uttered with a peculiar emotional trill, the whole seemingly delivered in a hurried manner, in one continuous gush of sprightly silvery notes, each accompanied by a metallic *teetolo*. As if exhausted, the singer falters, and the notes become scarcely audible, then suddenly reviving, as if in great joy, the song is resumed in all its vivacity, until the bird at last really appears to be overcome by its efforts.

Dr. Cones met with this species in Arizona in the winter. He writes me as follows: "The most eastern point where I observed this species was at St. Louis, Mo. I saw a good many in the suburbs of that city in May, 1865. It is one of the most abundant Sparrows about Fort Whipple, particularly during the migrations; the majority pass northward in April and May, but many breed in the vicinity, and some pass the winter in sheltered situations. It is generally seen in companies, frequenting the skirts of woods, the under-

brush along mountain rivulets, and similar situations, where the seeds of various plants are procurable; its general habits resemble those of the species of *Zonotrichia*."

The nests were found by Mr. Ridgway in various situations; the larger number were upon the ground, but several were in trees varying in height from six to twenty feet from the ground. They were found from the latter part of May through June. A nest obtained in Southern Wisconsin by Mr. Thure Kumlien is very homogeneous in structure, consisting entirely of loosely intertwined stems of dry grasses, sedges, and carices. It was built on the ground, is nearly flat, and has only a very shallow cavity. Its entire height is less than two inches, and the depth of its depression not half an inch. The diameter of the nest is three and a half inches, and that of the cavity at the rim three inches.

The maximum number of their eggs is five. Their average measurement is .85 by .65 of an inch. The ground-color is usually a grayish-white, rarely a light brown, marbled and streaked with waving lines, and a few dots of black or a blackish-brown.

GENUS **ZONOTRICHIA**, SWAINSON.

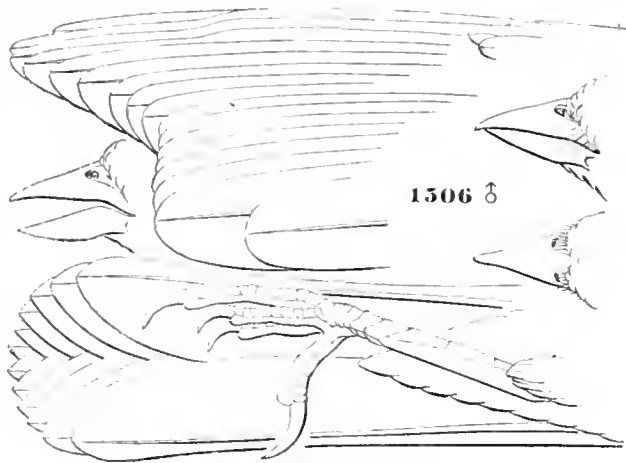
Zonotrichia, SWAINSON, Fauna Bor.-Am. II, 1831. (Type, *Emberiza leucophrys*.)

GEN. CHAR. Body rather stout. Bill conical, slightly notched, somewhat compressed, excavated inside; the lower mandible rather lower than the upper; gonys slightly convex; commissure nearly straight. Feet stout; tarsus rather longer than middle toe; the lateral toes very nearly equal. Hind toe longer than the lateral ones; their claws just reaching to base of middle one. Inner claw contained twice in its toe proper; claws all slender and considerably curved. Wings moderate, not reaching to the middle of the tail, but beyond the rump; secondaries and tertials equal and considerably less than longest primaries; second and third quills longest; first about equal to the fifth, much longer than tertials. Tail rather long, moderately rounded; the feathers not very broad.

Back streaked. Rump and under parts immaculate, except in young. Head black, or with white streaks, entirely different from the back.

This genus embraces some of the most beautiful of American Sparrows, all of the largest size in their subfamily.

All the species properly belonging to this genus are North American; several South American species, have, however, been assigned to it; but they are none of them strictly congeneric with those given below.



Zonotrichia leucophrys.

COMMON CHARACTERS. Feathers of interscapular region blackish centrally, passing into rufous-brown and edged with paler. Rump and upper tail-coverts uniform olivaceous-ashy brown. Two white bands on the wings; the tertials edged with rufous. Beneath without streaks. Head above marked with black, and generally with white. Cheeks plumbeous.

A. Black of the crown divided by a median light stripe. Jugulum ashy.

a. Throat ashy, uniform with the breast

1. **Z. leucophrys.** Median stripe of the crown white. A black stripe from behind the eye, and a white superciliary stripe.

a. A black stripe from the eye to forehead, across lore. *Hab.* Eastern Province of North America, west throughout Rocky Mountains; Cape St. Lucas in winter var. *leucophrys*

β. No black streak in front of eye, the lores being wholly ashy. *Hab.* Western Province North America, east to Rocky Mountains var. *gambeli.*

2. **Z. coronata.** Median stripe of crown yellow for anterior and ash for posterior half. Black of crown coming down to eye and ear coverts, leaving no light superciliary stripe. *Hab.* Pacific Province of North America; accidental east of Sierra Nevada.

b. Throat pure white, in sharp contrast with the dark ash of cheeks and jugulum.

3. **Z. albicollis.** Median stripe of crown white. A light superciliary stripe, yellow anterior to the eye, and white behind it; a black streak along upper edge of ear-coverts. *Hab.* Eastern Province of North America.

B. Black of the crown not divided, but continuous. Jugulum white.

4. **Z. querula.** Lores, forepart of cheeks, with the chin and throat, deep black; whole side of head behind the eye, ashy. Lower parts pure white. *Hab.* Missouri Plains.

Zonotrichia leucophrys, SWAINSON

WHITE-CROWNED SPARROW.

Emberiza leucophrys, FORSTER, Philos. Trans. LXII, 1772, 382, 426. — GMELIN, Syst. Nat. I, 1788, 871. — WILSON, Am. Orn. IV, 1811, 49, pl. xxxi, f. 4. *Fringilla* (*Zonotrichia*) *leucophrys*, SW. F. B. Am. II, 1831, 255. *Zonotrichia leucophrys*, BON. List, 1838. — *Id.* Consp. 1850, 178. — BAIRD, Birds N. Am. 1858, 458, pl. lxi, f. 2. — COOPER, P. A. N. S. 1861, 221. — MAYNARD, Birds E. Mass. 1870, 118. — COOPER, Orn. Cal. I, 196. — SAMUELS, 309. *Fringilla leucophrys*, AUD. Orn. Biog. II, 1834, 88, V, 515, pl. cxiv. — *Id.* Syn. 1839, 121. — *Id.* Birds Am. III, 1841, 157, pl. cxcii. *Spizella macroura*, BONAP. Comp. Rend. 1853 (either this or *Z. gambeli*). *White-crowned Sparrow*, PENNANT.

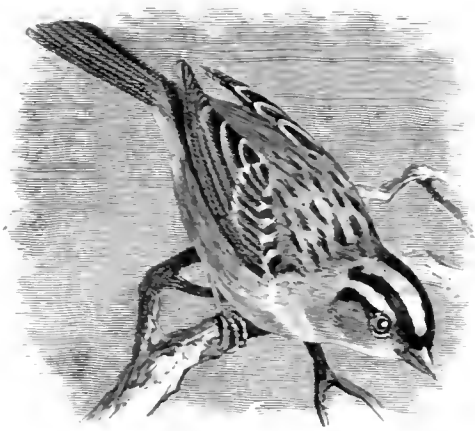
Figured in BUFFON, Ois. IV, 192, pl. cxxiii, f. 2. Winter.

SP. CHAR. Head above, upper half of loreal region from the bill, and a narrow line through and behind the eye to the occiput, black; a longitudinal patch in the middle of the crown, and a short line from above the anterior corner of the eye, the two confluent on the occiput, white. Sides of the head, forepart of breast, and lower neck all round, pale ash, lightest beneath, and shading insensibly into the whitish of the belly and chin; sides of belly and under tail-covert tinged with yellowish-brown. Interscapular region streaked broadly with dark chestnut-brownish. Edges of the tertiaries brownish-chestnut. Two white bands on the wing.

Female similar, but smaller; immature birds in first winter, with the black and white stripes on the crown replaced by dark chestnut-brown and brownish-yellow. Length, 7.10 inches; wing, 3.25. *Young of the year* thickly streaked with dusky on the breast. The lateral stripes of the crown dull brown, the median one streaked whitish.

HAB. United States from the Atlantic to the Rocky Mountains, where they become associated with *Z. gambeli*. Cape St. Lucas; Greenland (REINHARDT, Ibis, III, 7). Breed in Wahsatch Mountains (RIDGWAY).

The white of the crown separates two black stripes on either side, rather narrower than itself. The black line behind the eye is continued anterior to it into the black at the base of the bill. The lower eyelid is white. There are some obscure cloudings of darker on the neck above. The rump is immaculate. No white on the tail, except very obscure tips. The white on the wings crosses the ends of the middle and greater coverts.



Zonotrichia leucophrys.

The character distinguishing the western representative (*Z. gambeli*) of *leucophrys* is apparently very trifling, but is very constant.

HABITS. The White-crowned Sparrow is found from the Rocky Mountains eastward to the Atlantic, and in all the intervening territory, from the Southern States to the Arctic regions. In the high meadows of the Wahsatch Mountains, Mr. Ridgway found this bird very abundant, and one very characteristic, breeding there quite as numerously as any other species. In all that region Mr. Ridgway did not meet with a single individual of *Z. gambeli*, its western representative. At the encampment at Parley's Park these birds soon became on very familiar terms with the party. They were very sociable, and paid frequent visits to the cook's tent, and picked up, without the slightest signs of fear, the crumbs from the ground. Their sweet morning carol was, he states, delightful to the ear, and they were held in great favor by all. A nest of these birds was found on the ground, at Parley's Park, June 26. It was built in a bunch of *Geranium*. Specimens of this species were obtained, in winter, at Cape St. Lucas, Lower California, by Mr. Xantus.

Although an eastern species, passing, in its migrations, through the Southern Atlantic States to Labrador in the spring and returning in the fall, it is a rare species in all New England. Mr. Boardman says that it is not common in Eastern Maine, and Mr. Verrill that it is rare in the western part of that State. In Eastern Massachusetts it is very rare. Mr. Maynard mentions obtaining a single specimen, May 27, and regards it as quite a rare migrant. I have never met with the bird near Boston, and do not believe that it is found there, except singly and rarely. In the western part of the State, though less rare, it is very far from being common. It is found there in the spring, from the 20th to the 30th of May, and in October from the 1st

to the 15th. Mr. Allen met with it from May 7 to June 6, in 1861, when these birds were more common than usual. At this period, farther west, in Ohio, Western Pennsylvania, and New York, these birds are very abundant. From April 10 to the latter portion of May, in 1852, they were abundant in the neighborhood of Washington, the Capitol grounds being full of them. They were familiar and fearless, and seemed to delight to search for food under the large Norway spruces, branching down to the ground. Their abundance that spring may have been exceptional, as Wilson appears to have met with but very few specimens.

Mr. Audubon found these Sparrows very abundant in Labrador, where they were apparently late in breeding. It was not until the 6th of July that he found one of their nests. This was placed among the moss at the foot of a low fir. It was made externally of dry hynum mosses, matted in bunches like the coarse hair of some quadruped, and internally of fine dry grasses, arranged with great neatness, to the thickness of half an inch, with a full lining of the delicate yellow fibrous roots of the *Coptis trifolia*. The nest was five inches in its external diameter, and two in depth, the cavity two and a quarter wide and one and three quarters deep. The eggs, five in number, he describes as of a light sea-green color, mottled towards the larger end with brownish spots and blotches, a few spots of a lighter tint being dispersed over the whole. All the nests found were placed on the ground or among the moss, and all were alike in their construction. By the beginning of August the party met with young that were able to fly. By the middle of that month they had commenced their southern migrations.

Dr. Coues also found this Sparrow breeding in great numbers along the entire coast of Labrador. Found in all situations, it seemed to be particularly fond of deep, thickly wooded, and secluded ravines, surrounded by high precipitous cliffs, and, when in more open districts, confining itself to tangled patches of juniper and scrubby firs. He describes it as a very active and sprightly bird, almost continually in motion. It seldom alights without rapidly jerking and flirting its tail, and uttering its loud chirpings. While the female is incubating, the male usually mounts to the top of the cliff or a neighboring tree, and repeats his loud and not unpleasing, though somewhat monotonous, notes for the space of half an hour or more. He describes its song as very similar to that of the White-throated Sparrow, consisting of two long-drawn syllables with a rising intonation, then three more in a quick, hurried manner, with a falling cadence, — *pué-dē-dē-dē-dē*; the whole is delivered in a mellow whistle. If approached while thus engaged, the performer becomes instantly silent, and dives hastily into the nearest cover. The nest was always placed on the ground, and usually in little patches of low heath, abundant wherever the ground was dry. He found a nest on the 23d of July, containing young just hatched. The female flutters off in silence when her nest is disturbed, but the male bird vociferates his angry remonstrance, flirting his tail and jerking his body in an energetic manner.

The food of this bird, in Labrador, was found to consist of small coleopterous insects, grass-seeds, a variety of berries, as well as minute shell-fish, for which they searched the margins of ponds near the sea-shore. They were also seen to pursue insects on the wing. Mr. Audubon speaks of its song as consisting of six or seven notes, and describes it as loud, clear, and musical, although of a plaintive nature, diminishing in power to the last note. Its flight he describes as low, swift, and protracted.

Dr. Coues did not find this bird abundant in South Carolina during the winter, and conjectures that it does not go so far to the south. Its migrations do not appear to be well defined, and nowhere is it known to be abundant during this season. Lieutenant Couch met with it at Brownville, Texas, and Tamaulipes, Mexico, and at Charco Escondido, in March, at which time they were in flocks, indicating a more southern migration than is generally supposed.

It extends its northern migrations to the extreme northern and northeastern portions of the continent, and also to Greenland. On the Yukon and Anderson River it is replaced by the *Z. gambeli*. It is not abundant in Greenland. Holböll obtained a single specimen only in August, and afterwards met with a flock of young birds. He infers that they breed in the interior, but are restricted to a very narrow strip of territory.

Eggs of this species, from Wyoming Territory, measure from .90 to .95 of an inch in length by .70 in breadth, and are of an oblong-oval shape. The ground-color is a light greenish-white, thickly marked with reddish-brown and lighter markings of an obscure purplish-brown. The intensity, depth of coloring, and size of the darker brown markings, vary. They are principally disposed about the larger end.

***Zonotrichia leucophrys* var. *gambeli*, GAMBEL.**

WESTERN WHITE-CROWNED SPARROW.

Fringilla gambeli, NUTT. Man. 1, (2d ed.,) 1840, 556. — GAMBEL, Pr. A. N. Sc. Phila. I, 1843, 262 (California.) *Zonotrichia gambeli*, GAMBEL, J. A. N. Sc. 2d series, I, Dec. 1847, 50. — BAIRD, Birds N. Am. 1858, 460, pl. lxix, f. 1. — LORD, Pr. R. A. Inst. IV, 1864, 119 (British Columbia). — COOPER & SUCKLEY, 201. — DALL & BANNISTER, Tr. Ch. Ac. I, 1869, 284 (Alaska). — COOPER, Orn. Cal. I, 195. *Zonotrichia leucophrys*, NEWBERRY, Zool. Cal. & Or. Route; Rep. P. R. R. VII, IV, 1857, 87.

SP. CHAR. Precisely similar to *Z. leucophrys*. but rather smaller; the lores are gray throughout, this color continuous with a white superciliary stripe along the side of the head. Length, 6.25; wing, 2.83; tail, 3.08.

HAB. Rocky Mountains to the Pacific coast, north to Nulato and Fort Kenai, east through the valley of the Mackenzie River, and south to Jalisco and Mazatlan, Mexico.

As stated in the previous article, the only appreciable and constant difference between this race and *Z. leucophrys* is found in the character of the black stripe on the side of the crown. In *leucophrys* the black passes down

over the upper half of the lores, and in front of the eye, to a line continuous with the cutting edge of the bill, and sends back a short branch to the eye, which cuts off the white superciliary stripe. In *gambeli* the superciliary stripe passes continuously forward to the ashy lores, cutting off the black from the eye. The lower edge of the black anteriorly is much higher than in *leucophrys*, and nearly on a line with the nostrils.

We cannot give any positive character by which immature specimens of *leucophrys* and *gambeli* may be distinguished, unless that the short dark line from forehead to eye of the former is indicated by a greater amount of dusky at the base of the feathers of that region.

The young of this species, like that of *leucophrys*, is streaked with blackish on side of the throat, across the breast, and on the sides of body, instead of being entirely unmarked beneath, as in the adult.

One specimen, collected in the West Humboldt Mountains, connects this form with *leucophrys*, and may possibly be a hybrid. In this there is a black spot in front of the eye, but separated from the black of the crown by the usual light superciliary stripe of *gambeli*.

Some specimens from the coast region of California have the ash of head and breast duller, and with a brownish cast, and the spots on the back black instead of deep dark brown.

HABITS. The Western White-crowned Sparrow is found in great abundance, from Mexico to the Arctic Ocean, between the Rocky Mountains and the Pacific. Dr. Suckley found this bird very abundant at Fort Dalles and at Puget Sound, at both of which places it is a constant summer resident. It was always found in excellent condition. He states that it makes its nest in low bushes, among the stalks of lupins and other shrub-like weeds. Dr. Cooper also mentions that this bird is very abundant in all the prairie districts of Washington Territory, especially where there are low bushes. Unlike most of the Sparrows, it was also common on the coast prairies, where he found it breeding. They arrive at the Straits of Fuca at the end of March in large numbers, and leave for the South in October. He afterwards found them at Fort Mohave, in the Colorado Valley, quite common throughout the winter, some remaining until the 15th of May, but he does not think that any remain there to breed. They are also abundant, in winter, from San Francisco south, through all the inhabitable country. In summer they are found in the Sierra Nevada, to their summits, and are also plentiful in the regions north of the Columbia. A few remain, during the summer, in the cool district about San Francisco. In June, 1854, Dr. Cooper met with its nest near the mouth of the Columbia. It was built in a bush, about a foot from the ground, formed of neatly interwoven grasses, and lined with softer materials. He describes its song as loud, but short and melancholy, heard at intervals during the whole year, and frequently at night.

The Western White-crowned Sparrow was first met with by Mr. Ridgway,

at the Summit Meadows, near the summit of Donner Lake Pass of the Sierra Nevada, at an altitude of about seven thousand feet. It was there an abundant and characteristic bird. The males were in full song in all parts of the meadow, and were nesting in such numbers that on the evening of July 9, on halting for the night, in a hurried search no less than twenty-seven of their eggs were obtained within about fifteen minutes. In every instance the nests were embedded under a species of dwarf-willow, with which the ground was covered. The birds were extremely unsuspicious, the male often sitting on a bush within a few feet of the collector, and chanting merrily as the eggs were being blown. In one instance, having occasion to repass a spot from which a nest had been taken, the female was found sitting in the cavity from which its nest had been removed. This species is only a winter visitant of the lower country, but is there universally distributed, and always found in bushy localities.

Mr. Bannister states that this bird was tolerably abundant among the alder-bushes in certain parts of St. Michael's Island. Mr. Dall found it common at Nulato, and especially so at Fort Yukon. It arrived at Nulato about May 20. Its nests and eggs were obtained from Indians at Nowikakat, on the Yukon River. Dr. Kennerly met with these birds, in February, at White Cliff Creek, New Mexico. They were first observed on approaching the Big Sandy, and from thence to the Colorado they were found in abundance. They were mostly in flocks, and were generally found among the bushes, in the vicinity of water. He also met with it in the valley of the Rio Grande, Corralitos, and Janos Rivers. It seemed to prefer the vicinity of settlements, where it was always seen in greater numbers than elsewhere.

Mr. Dresser found these birds common about San Antonio, Texas, during the winter, arriving late in September. Some may remain and breed, as several were observed there in June. Dr. Coues also found them abundant in Arizona, where he first observed them September 15. After this they became exceedingly numerous, and remained so until January. Later than this only a few stragglers were seen, until April, when they again became abundant. By far the greater part left, and proceeded north to breed.

These Sparrows were found breeding on the Yukon and at Fort Anderson in great numbers by Messrs. MacFarlane, Lockhart, and Ross. Their nests were in nearly all cases found upon the ground, often in tufts of grass, clumps of Labrador tea, or other low bushes. They were composed of hay, and, in nearly every instance, were lined with deer's hair, and in a few with feathers. A few were without any lining. In selecting a situation for their nests, they seemed generally to give the preference to open or thinly wooded tracts. The male bird was usually seen, or its note heard, in the immediate vicinity of the nest. The eggs were obtained from the 4th of June to the 1st of July. Their maximum number was six; the most common, four.

Mr. B. R. Ross states that this species arrives at the Arctic Circle from

about the 15th to the 20th of May, and at Slave Lake only a few days earlier. They are then no longer in flocks, but have already paired. They commence nesting almost immediately upon their arrival at the Yukon and at Fort Good Hope. Mr. Ross found nests made as early as May 20 to 25, while there was still considerable snow upon the ground. They mostly nest, however, in the first half of June, the young usually hatching between the 15th and 30th, and leaving the nests when less than a month old. They all leave the Arctic Circle about the middle of September. A few were seen at Fort Simpson in the latter part of that month. When starting, they gather in small flocks. The nest is built on high ground, among low, open bushes, always at the foot of some shrub or bush, and more or less protected and concealed by grass. It is never placed in the edges of marshes, like *Melospiza lincolni*; nor on small prairies, like the *Passerculus savanna*; nor in thick woods, as does sometimes the *Z. albicollis*. The nest is neatly built, is more compact and of finer materials than that of the latter. It is large and deep, formed externally of coarse grass, and lined with finer materials.

When started from her nest, the female flies off a few yards and flutters silently along the ground to divert attention. If unsuccessful, she flies about her nest uttering sharp, harsh notes of anxiety. The male is less bold on such occasions. Their favorite habitat is light open bushes, affecting neither open plains nor deep woods and never perching so high as twenty feet from the ground, and usually, in all their movements, keeping close to the earth.

Its food, so far as could be observed, consisted almost wholly of seeds, sought mostly on the ground. It hatches only a single brood in a year.

Mr. B. R. Ross adds that this is the most abundant Sparrow throughout the Mackenzie River region, and also the most interesting. Through the spring and summer its melodious song, which strongly calls to mind the first notes of the old air, "O Dear! what can the Matter be?" may be heard from every thicket, both night and day. When sleeping in the woods, Mr. Ross states that he has often been awakened by several of these birds singing near him, answering each other, throughout the short night, when all the other birds were silent. On this account, but for the richness and melody of its song the bird would have made itself quite disagreeable.

The Cree Indians name this Sparrow *Wah-si-pis-chan*, because they think this resembles its notes, the last of which are supposed to imitate the sound of running water. It sings long after the breeding-season is past, and its notes may be heard even into August.

The eggs measure .85 of an inch in length by .65 in breadth, and have a ground of a greenish-white marked with a rusty-brown. They are of a rounded-oval shape.

Zonotrichia coronata, BAIRD.**GOLDEN-CROWNED SPARROW.**

Emberiza coronata, PALLAS, Zoög. Rosso-Asiat. II, 1811, 44, plate. *Zonotrichia c.*, BAIRD, Birds N. Am. 1858, 461. — HEERM. X, S, 48 (nest). — COOPER & SUCKLEY, 201. — DALL & BANNISTER, Tr. Ch. Ac. I, 1869, 284 (Alaska). — COOPER, Orn. Cal. I, 197. *Emberiza atricapilla*, AUD. Orn. Biog. V, 1839, 47, pl. cccxciv (not of GMELIN). *Fringilla atricapilla*, AUD. Synopsis, 1839, 122. — IB. Birds Am. III, 1841, 162, pl. cxciii. *Fringilla aurocapilla*, NUTTALL, Man. I, (2d. ed.,) 1840, 555. *Zonotrichia aurocapilla*, BON. Consp. 1850, 478. — NEWBERRY, Zoöl. Cal. & Or. Route, Rep. P. R. R. VI, iv. 1857, 88. *Emberiza atricapilla*, GM. I, 1788, 875 (in part only). — LATH. Ind. 415. *Black-crowned Bunting*, PENNANT, Arc. Zoöl. II, 364. — LATH. II, 1, 202, 49, tab. Iv.

SP. CHAR. Hood, from bill to upper part of nape, pure black, the middle longitudinal third occupied by yellow on the anterior half, and pale ash on the posterior. Sides and under parts of head and neck, with upper part of breast, ash-color, passing insensibly into whitish on the middle of the body; sides and under tail-coverts tinged with brownish. A yellowish spot above the eye, bounded anteriorly by a short black line from the eye to the black of the forehead. This yellow spot, however, reduced to a few feathers in spring dress. Interscapular region, with the feathers, streaked with dark brown, suffused with dark rufous externally. Two narrow white bands on the wings. Bill dusky above, paler beneath; legs flesh-color.

Autumnal specimens have more or less of the whole top of head greenish-yellow; the feathers somewhat spotted with dusky; the black stripe of the hood reduced to a narrow superciliary line, or else to a spot anterior to the eye. Length about 7 inches; wing, 3.30.

HAB. Pacific coast from Russian America to Southern California; West Humboldt Mountains, Nev. Black Hills of Rocky Mountains?

HABITS. This species, described and figured by Mr. Audubon as the *Fringilla atricapilla*, is found in western North America, from Alaska to Southern California and Cape St. Lucas, and is almost entirely confined to the Pacific Province, being known east of the Cascade Mountains and Sierra Nevada only as stragglers. In its general habits it is said to greatly resemble the *Z. gambeli*. In the vicinity of Fort Dalles, and also in the neighborhood of Fort Steilacoom, Dr. Suckley found it quite abundant in the summer.

Dr. Cooper says that it is only a straggler in the forest regions west of the Cascade Mountains, but that it probably migrates more abundantly to the open plains eastward of them. He met with them but once near Puget Sound, May 10, when they were apparently migrating. Dr. Cooper found a few of this species wintering as far south as San Diego, associating with *Z. gambeli*. They were much less familiar, did not come about the houses, but kept among the dense thickets. They were then silent, nor has he ever heard them utter any song. He met with none near the summit of the Sierra Nevada.

Dr. Newberry found these birds abundant in the vicinity of San Francisco in winter.

Mr. Nuttall met with the young birds of this species on the central table-

lands of the Rocky Mountains, in the prairies. They were running on the ground. He heard no note from them. He afterwards saw a few stragglers, in the early part of winter, in the thickets of the forests of the Columbia River, near Fort Vancouver. He also met with them, in the winter and until late in the spring, in the woods and thickets of California.

Dr. Heermann found this species very abundant in the fall season, generally associated with the California Song Sparrow and the *Z. gambeli*. It resorts to the deep shady thickets and woods, where it passes the greater part of its time. In the mountainous districts it prefers the hillsides, covered with dense undergrowth. It occasionally breeds in California, as Dr. Heermann found its nest in a bush near Sacramento City. It was composed of coarse stalks of weeds, and lined internally with fine roots. The eggs were four in number, and are described as having been of an ashy-white ground, with markings of brown umber, at times appearing almost black from the depth of their shade. They were marked also with a few spots of a neutral tint.

Many of these birds were obtained in Sitka and in Kodiak, by Bischoff, and also in British Columbia by Elliot.

Only one specimen of this species was met with by Mr. Ridgway in his explorations with Mr. Clarence King's survey. This was taken October 7, 1867, in the West Humboldt Mountains, in company with a flock of *Z. gambeli*.

Zonotrichia albicollis, BONAP

WHITE-THROATED SPARROW.

Fringilla albicollis, GÜNTHER, Syst. Nat. I, 1788, 926. — WILSON, Am. Orn. III, 1811, 51, pl. xvii, f. 2. — LIEUT. VERZ. Doubl. No. 247 (1823). *Zonotrichia albicollis*, BR. CONSP. 1850, 478. — CAB. MUS. Hain. 1851, 132. — BAYL. Birds N. Am. 1858, 463. — SAMUELS, 311. *Passer pennsylvanicus*, BRISSON, 1760, Appendix, 77. *Fringilla pennsylvanica*, LATH. Index, I, 1790, 445. — AUD. Orn. Biog. I, 1831, 42; V, 497, pl. viii. — IR. SYN. 1839, 121. — IR. Birds Am. III, 1841, 153, pl. exci. — MAX. Cab. Jour. VI, 1858, 276. *Fringilla (Zonotrichia) pennsylvanica*, SW. F. B. Am. II, 1831, 256. *Zonotrichia pennsylvanica*, BON. List, 1838.

SP. CHAR. Two black stripes on the crown, separated by a median one of white. A broad superciliary stripe from the base of the mandible to the occiput, yellow as far as the middle of the eye and white behind this. A broad black streak on the side of the head from behind the eye. Chin white, abruptly defined against the dark ash of the sides of the head and upper part of the breast, fading into white on the belly, and margined by a narrow black maxillary line. Edge of wing and axillaries yellow. Back and edges of secondaries rufous-brown, the former streaked with dark brown. Two narrow white bands across the wing-coverts. Length, 7 inches; wing, 3.10; tail, 3.20. Young of the year not in the collection.

HAB. Eastern Province of North America to the Missouri. Breeding in most of the northern United States and British Provinces, and wintering in the United States almost to their southern limit. Aberduness, England, August 17, 1867 (Zoologist, Feb., 1869, 1547; P. Z. S. 1857, 52). Scotland (NEWTON, Pr. Zool. Soc. 1870, 52).

Female smaller, and the colors rather duller. Immature and winter specimens have the white chin-patch less abruptly defined, the white markings on the top and sides of the head tinged with brown. Some specimens, apparently mature, show quite distinct streaks on the breast and sides of throat and body.

HABITS. The White-throated Sparrow is, at certain seasons, an abundant bird in all parts of North America, from the Great Plains to the Atlantic, and from Georgia to the extreme Arctic regions. A few breed in favorable situations in Massachusetts, especially in the extreme northwestern part of the State. It breeds abundantly in Vermont, New Hampshire, and Maine, and in all the British Provinces.

Sir John Richardson states that they reach the Saskatchewan in the middle of May, and spread throughout the fur countries, as far, at least, as the 66th parallel, to breed. He states that he saw a female sitting on seven eggs near the Cumberland House, as early as June 4. The nest was placed under a fallen tree, was made of grass, lined with deer's hair and a few feathers. Another, found at Great Bear's Lake, was lined with the *setæ* of the *Bryum uliginosum*. He describes the eggs as of a pale mountain-green, thickly marbled with reddish-brown. When the female was disturbed, she ran silently off in a crouching manner, like a Lark. He describes the note of this bird as a clear song of two or three notes, uttered very distinctly, but without variety, — a very incomplete description.

Mr. Kennicott states that this species does not extend its migrations as far to the north as *Z. gambeli*, and is even much less numerous on the south shores of the Slave Lake, where he did not observe half so many of this as of the other. It also nests later, as he found the first nest observed on the 22d of June, with the eggs quite fresh, incubation not having commenced, and found others after that date. On English River he found two nests with eggs on the 9th and 17th of July, and one near the Cumberland House on the 30th of June. Two of these were in low swampy ground among large trees, the other on high ground among small bushes. They were constructed on large bases of moss, and lined with soft grasses. When startled from her nest, the female always crept silently away through the grass.

He met with this species in considerable flocks, accompanied by small numbers of *Z. leucophrys*, on the north shore of Lake Superior, on the 11th of May. He saw individuals on the 29th of May, near the Lake of the Woods, and it doubtless breeds as far south as that region. In the fall it was not seen at Fort Simpson later than the last of September. As it is a much more eastern bird than *Z. gambeli*, it is probably in greater abundance on the eastern end of Slave Lake. Its song he regards as by no means so attractive as that of *Z. gambeli* or of *Z. leucophrys*. Its general habits are very much like those of the former, and though by no means a strictly terrestrial bird, it rarely perches high on trees, and generally flies near the ground, except in its long migratory flights.

Notwithstanding the slighting manner in which the song of this bird is spoken of by some writers, in certain parts of the country its clear, prolonged, and peculiar whistle has given to it quite a local fame and popularity. Among the White Mountains, where it breeds abundantly, it is known as the Peabody Bird, and its remarkably clear whistle resounds in all their glens and secluded recesses. Its song consists of twelve distinct notes, which are not unfrequently interpreted into various ludicrous travesties. As this song is repeated with no variations, and quite frequently from early morning until late in the evening, it soon becomes quite monotonous.

Among the White Mountains I have repeatedly found its nests. They were always on the ground, usually sheltered by surrounding grass, and at the foot of bushes or a tree, or in the woods under a fallen log. In that region it retained all its wild, shy habits, rarely being found in the neighborhood of dwellings or in cultivated grounds. But at Halifax this was not so. There I found them breeding in gardens, on the edge of the city, and in close proximity to houses, apparently not more shy than the common Song Sparrow.

Wilson states that these birds winter in most of the States south of New England, and he found them particularly numerous near the Roanoke River, collecting in flocks on the borders of swampy thickets, among long rank weeds, the seeds of which formed their principal food. He gives the 20th of April as the date of their disappearance, but I have observed them lingering in the Capitol grounds in Washington several weeks after that date. They pass through Eastern Massachusetts from the 10th to the 20th of May, and re-pass early in October. A few stragglers sometimes appear at earlier dates, but irregularly. In Western Maine, where it is quite common, Professor Verrill states that it sometimes arrives by the middle of April. Near Springfield, Mass., Mr. Allen noted their appearance between the last of April and the 20th of May; in fall, from the last of September through October. Their favorite haunts are moist thickets. The young males do not acquire their full plumage until the second spring, but sing and breed in the plumage of the females, as Mr. Allen ascertained by dissection. Mr. Hildreth observed a pair near Springfield during three successive summers, and although he could not find the nest, he saw them feeding their scarcely fledged young birds.

At Columbia, S. C., Dr. Cones found these Sparrows very abundant, from October through April. They sing, more or less, all winter, and during the last few weeks of their stay are quite musical. Many hundreds pass the months of March and April in the gardens of that city, though during the winter they were mostly to be found in thickets and fields, in company with many other species.

A single specimen of this bird was killed in Aberdeenshire, August 17, 1867, and a second was lately captured alive near Brighton (P. Z. S., June 4, 1872).

Mr. Audubon says that this bird visits Louisiana and all the Southern districts in winter, remaining from November to March, in great numbers. They form groups of from thirty to fifty, and live together in great harmony, feeding upon small seeds. At this time they are plump to excess, and are regarded as a great delicacy.

When kept in confinement these birds become quite tame, and in the spring will sing at all hours of the day or night.

The nest of this bird is usually, if not always, on the ground, but in various situations, as I have found them on a hillside, in the midst of low underbrush, in a swampy thicket, at the foot of some large tree in a garden, as at Halifax, by the edge of a small pond, or in a hollow and decaying stump. Their nest is large, deep, and capacious, with a base of moss or coarse grasses, woven with finer stems above and lined with hair, a few feathers, fine rootlets of plants or soft grasses. The eggs vary from four to seven in number. Their ground-color is of a pale green or a greenish-white, marked over the entire egg with a fox-colored or rusty brown. Occasionally these markings are sparsely scattered, permitting the ground to be plainly visible, but generally they are so very abundant as to cover the entire egg so closely as to conceal all other shade, and give to the whole a deep uniform rufous-brown hue, through which the under color of light green is hardly distinguishable. They measure .90 by .68 of an inch.

Zonotrichia querula, GAMBEL.

HARRIS'S SPARROW; BLACK-HOODED SPARROW.

Fringilla querula, NUTTALL, Man. I, (2d ed.,) 1840, 555 (Westport, Mo.). *Zonotrichia querula*, GAMBEL, J. A. N. Sc. 2d Ser. I, 1847, 51. — BONAP. Consp. 1850, 478. — BAIRD, Birds N. Am. 1858, 462. — ALLEN, Amer. Naturalist, May, 1872. *Fringilla harrisi*, AUD. Birds Am. VII, 1843, 331, pl. cccclxxxiv. *Fringilla comata*, PR. MAX. Reise II, 1841. — IB. Cab. Jour. VI, 1858, 279. *Zonotrichia comata*, BP. Consp. 1850, 479.

SP. CHAR. Hood and nape, sides of head anterior to and including the eyes, chin, throat, and a few spots in the middle of the upper part of the breast and on its sides, black. Sides of head and neck ash-gray, with the trace of a narrow crescent back of the ear-coverts. Interseapular region of back with the feathers reddish-brown streaked with dark brown. Breast and belly clear white. Sides of body light brownish, streaked. Two narrow white bands across the greater and middle coverts. Length about 7 inches; wing, 3.40; tail, 3.65.

HAB. Missouri River, above Fort Leavenworth. Chillicothe, Mo. (Hoy). Very common in Eastern Kansas (ALLEN). San Antonio, Texas, spring (DRESSER, Ibis, 1865, 488).

The bill of this species appears to be yellowish-red. More immature specimens vary in having the black of the head above more restricted, the nape and sides of the head to the bill pale reddish-brown, lighter on the latter region. Others have the feathers of the anterior portion of the hood edged with whitish. In all there is generally a trace of black anterior to the eye.

This species has a considerably larger bill than *Z. leucophrys*, the mandible especially.

HABITS. This species was first described in 1840, by Mr. Nuttall, from specimens obtained by him near Independence, Mo., near the close of the month of April. He again met with them on the following 5th of May, when not far from the banks of the Little Vermilion River, a branch of the Kansas. He found them frequenting thickets, and uttering, chiefly in the early morning, but also occasionally at other parts of the day, a long, drawling, faint, solemn, and monotonous succession of notes, resembling *tē-dē-dē-dē*.

Since then but little additional information has been obtained in regard to their general habits, their geographical distribution, or their mode of breeding, single specimens only having been taken at considerable intervals in the valley of the Missouri and elsewhere until 1872. Two specimens were secured by Mr. Dresser, near San Antonio, in Western Texas, occurring on the Medina River during their spring migrations. More recently this bird was taken twice by Mr. H. W. Parker, in Jasper County, Iowa. The latest of these was secured May 19.

Professor F. H. Snow, in his List of Kansas Birds, published April, 1872, enumerates this species as a bird frequently taken in Kansas in the winter, and probably resident; and Mr. J. A. Allen American Naturalist, May, 1872, states that Harris's Finch was, next to the Cardinal, the most abundant species of the family of Sparrows and Finches in the vicinity of Leavenworth, as it was also one of the largest and handsomest. He found it almost exclusively frequenting the damper parts of the woods, associating with the White-throated Sparrow, much resembling it both in habits and in song. Nothing has so far been published respecting the nest and eggs.

GENUS JUNCO, WAGLER.

Junco, WAGLER, Isis, 1831. (Type, *Fringilla coerulescens*, SW.)

Nymphis, AUDUBON, Syn. 1839. (Type, *Emberiza hortulana*, GM.)

GEN. CHAR. Bill small, conical; culmen curved at the tip; the lower jaw quite as high as the upper. Tarsus longer than the middle toe; outer toe longer than the inner, barely reaching to the base of the middle claw; hind toe reaching as far as the middle of the latter; extended toes reaching about to the middle of the tail.



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Wings rather short; reaching over the basal fourth of the exposed surface of the tail; primaries, however, considerably longer than the secondaries and tertials, which are nearly equal. The second quill longest, the third to fifth successively but little shorter; first longer than sixth, which exceeds the secondaries. Tail moderate, a little shorter than the wings; slightly

emarginate and rounded. Feathers rather narrow; oval at the end. No streaks on the head or body; color above uniform on the head, back, or rump, separately or on all together. Belly white; outer tail-feathers white. Young birds streaked above and below.

The essential characters of this genus are the middle toe rather shorter than the short tarsus; the lateral toes slightly unequal, the outer reaching the base of the middle claw; the tail a little shorter than the wings, slightly emarginate. In *Junco cinereus* the claws are longer; the lower mandible a little lower than the upper.

Species and Varieties.

COMMON CHARACTERS. Prevailing color plumbeous; abdomen, crissum, and lateral tail-feathers white.

A. Bill entirely light flesh-colored, dusky only at extreme point. Color of jugulum (deep ash or plumbeous-black) abruptly defined against the pure white of the abdomen.

a. Posterior outline of the dark color of the jugulum convex; sides pinkish.

1. **J. oregonus.** Back and wings more or less tinged with dark rusty, in sharp contrast with the black (♂) or ash (♀) of the head and neck. *Hab.* Pacific Province of North America, from Sitka southward; east across the Middle Province of United States, to the Rocky Mountains (where mixed with *J. caniceps*¹) occasionally to the Plains (where mixed with *J. hyemalis*²).

b. Posterior outline of the dark color of the jugulum concave; sides ashy.

2. **J. hyemalis.** Back and wings without rusty tinge.

Wing without any white; three outer tail-feathers only, marked with white. Bill, .40 and .25; wing, 3.10; tail, 2.80; tarsus, .80. *Hab.* Eastern Province North America. Straggling west to Arizona (COUES); in the northern Rocky Mountains, mixed with *J. oregonus* var. *hyemalis*.

Wing with two white bands (on tips of middle and greater coverts); four outer tail-feathers marked with white. Bill, .50 and .30; wing, 3.40; tail, 3.20. *Hab.* High mountains of Colorado (El Paso Co., AIKEN) var. *aikeni*.

3. **J. caniceps.** Back (interscapulars) rufous; scapulars and wings uniform ashy. *Hab.* Central Rocky Mountains of United States. (Along southern boundary mixed with *J. cinereus*.³)

¹ Hybrid between *oregonus* and *caniceps*, = "*annectens*," BAIRD, Geol. Surv. Cal. Orn. I, p. 564.

CHAR. Pinkish sides and convex outline to ash of breast, as in *oregonus*, with the bright rufous back and ashy head, with black lores of *caniceps*; a tendency in the rufous of back to tinge the wings, as in *oregonus*. *Hab.* Southern Rocky Mountains. (Fort Whipple, Arizona, COUES; Fort Bridger, Wyoming, DREXLER; Fort Burgwyn, Mountains of Colorado, AIKEN.)

² Hybrid between *hyemalis* and *oregonus*.

CHAR. Plumbeous back of *hyemalis*, with pinkish sides of *oregonus*; or else reddish back of *oregonus* and plumbeous sides of *hyemalis*, or colors mixed both above and below. *Hab.* Sun River, Dakota; McKenzie River District? Fort Whipple, Arizona; and Fort Bridger, Wyoming.

³ Hybrid between *caniceps* and *cinereus*, = "*dorsalis*," HENRY, Pr. Phil. Ac. 1858, 117; BAIRD, Birds N. Am. 1858, 467.

CHAR. Rufous restricted to interscapular region, as in the former, with black upper mandible, and pale ash throat of the latter. *Hab.* Fort Thorn, New Mexico.

B. Bill with the upper mandible black, the lower yellow. Ash of the jugulum fading gradually into the grayish-white of the abdomen.

4. **J. cinereus.** Whole back, scapulars, wing-coverts, and tertials rufous.

Throat and jugulum pale ash; back bright rufous. Wing, 3.10; tail, 3.00; bill, .34 and .25; tarsus, .80. *Hab.* Table-lands and mountains of Mexico. var. *cinereus*.¹

Throat and jugulum deep ash; back dull, or olivaceous-rufous. Wing, 3.15; tail, 3.10; bill, .41 and .34; tarsus, .90.

Hab. High mountains of Guatemala. var. *alticola*.²

Junco hyemalis, SCLATER.

SNOWBIRD.

Fringilla hyemalis, LINN. Syst. Nat. I, (10th ed.,) 1758, 183 (not of GMELIN or LATHAM). — AUD. Orn. Biog. I, 1831, 72; V, 505, pl. xiii. — MAX. Cab. Jour. VI, 1858, 277. *Fringilla (Spiza) hyemalis*, BON. Syn. 1828, 109. *Emberiza hyemalis*, LINN. Syst. Nat. I, 1766, 308. *Struthus hyemalis*, BON. List, 1838. — IN. Consp. 1850, 475. *Niphaea hyemalis*, AUD. Synopsis, 1839, 106. — IN. Birds Am. III, 1841, 88, pl. clxvii. *Junco hyemalis*, SCLATER, Pr. Zool. Soc. 1857, 7. — BAIRD, Birds N. Am. 1858, 468. — COUES, P. A. N. S. 1861, 224. — DALL & BANNISTER, Tr. Ch. Ac. I, 1869, 284. — SAMUELS, 314. *Fringilla hudsonia*, FORSTER, Philos. Trans. LXII, 1772, 428. — GMELIN, I, 1788, 926. — WILSON'S Index, VI, 1812, p. xiii. *Fringilla nivalis*, WILSON, II, 1810, 129, pl. xvi, f. 6.

SP. CHAR. Everywhere of a grayish or dark ashy-black, deepest anteriorly; the middle of the breast behind and of the belly, the under tail-coverts, and first and second external tail-feathers, white; the third tail-feather white, margined with black. Length, 6.25; wing, about 3. Female paler. In winter washed with brownish. Young streaked above and below.

HAB. Eastern United States to the Missouri, and as far west as Black Hills. Stragglers at Fort Whipple, Arizona, and mountains of Colorado.

The wing is rounded; the second quill longest; the third, fourth, and fifth, successively, a little shorter; the first longer than the sixth. Tail slightly rounded, and a little emarginate. In the full spring dress there is

¹ *Junco cinereus*, CABANIS, Mexican Snowbird. *Fringilla cinerea*, SW. Syn. Birds Mex. in Phil. Mag. I, 1827, 135. *Junco cinereus*, CABANIS, Mus. Hein. 1850, 134. BAIRD, Birds N. Am. 1858, 465. "*Fringilla rufidorsis*, LICHTE.," BONAPARTE; probably a catalogue name. *Junco phatonotus*, WAGLER, Isis, 1831, 526. — BONAP. Comptes Rendus, XXXVII, 518.

SP. CHAR. Ash-color above; with a broad quadrate interscapular patch of rufous-chestnut, this extending over the wing-coverts and inner secondaries. Beneath paler ash, lighter in middle region below, but without distinct line of demarcation. Lores and anterior region of eye dusky; in decided contrast. Outer three tail-feathers white, but dusky at base and on outer web at end; the amount increasing internally. Upper bill entirely black; lower yellow. Length, 6.40; height of bill, .25; culmen, .46. *Hab.* Table-lands of Mexico.

² *Junco alticola*, SALVIN, Guatemalan Snowbird. *Junco alticola*, SALVIN, P. Z. S. 1863, 189 (Highlands, Guatemala). — *Id.* *Ibis*, 1866, 193.

SP. CHAR. Similar to *J. cinereus*, but darker than Mexican species, with less contrast between the rufous of back and the ash of head. Tail with less white. Bill much larger: height, .34; culmen, .56. *Hab.* Highlands of Guatemala.

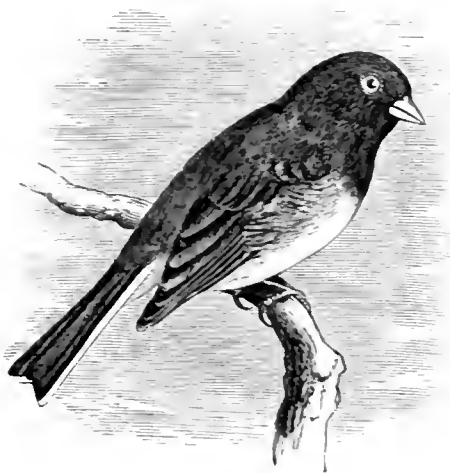
no trace of any second color on the back, except an exceedingly faint and scarcely appreciable wash of dull brownish over the whole upper parts. The markings of the third tail-feather vary somewhat in specimens. Sometimes the whole tip is margined with brown; sometimes the white extends to the end; sometimes both webs are margined with brown; sometimes the outer is white entirely; sometimes the brownish wash on the back is more distinct.

Some specimens (No. 52,702 and 52,701, males) from Sun River, Dakota, appear to be hybrids with *oregonus*. They have the general appearance of *hyemalis*, the back being nearly uniform with the head (with a wash of sepia-brown, however), and the head and neck of the same dark plumbeous; the sides, however, are pinkish, and the plumbeous on the jugulum has its posterior outline convex, as in *oregonus*. If, as there is every reason to believe, these specimens are really hybrids, then we have the two extreme forms of the genus connected by specimens of such a condition; thus, *hyemalis* with *oregonus*, *oregonus* with *caniceps* (= *annectens*, Baird), and *caniceps* with *cinereus* (= *dorsalis*, Henry). It may perhaps be considered a serious question whether all (including *alticola*) are not, in reality, geographical races of one species. However, as there is no possibility of ever proving this, it may be best to consider them as representative species, and these specimens of intermediate characters as hybrids.

HABITS. The common familiar Snowbird of the Eastern States is found throughout all North America, east of the Black Hills, from Texas to the Arctic regions. Wherever found, it is at certain seasons a very abundant and an equally familiar bird.

It nests as far south, in mountainous regions, as Virginia, and thence to New York and the northern parts of the New England States, breeding only in the highlands, but descending more and more into the plains as we proceed north. As it is a very hardy bird, its migrations are irregular and uncertain. In some seasons I have observed but few at irregular intervals; and in others, in which the spring was cold and backward, I have met with them in every month except July and August.

Mr. Kennicott found but few birds of this species breeding as far south as Fort Resolution or Slave Lake, and was unable to find any of their nests, though he met with a few birds that were evidently breeding there. He found it afterwards nesting in the greatest abundance about latitude 65°. They were very numerous on the Yukon, and Mr. MacFarlane found them breeding plentifully on the Anderson River, at the edge of the barren-ground region.



Junco oregonus

The nests found by Mr. Kennicott were all on the ground, more or less concealed in tufts of grass, dry leaves, or projecting roots. Some were in thick woods, others in more open regions, and were lined with moose-hair.

Mr. Ross states that this species frequents all the Mackenzie River region in summer, arriving about the 20th of April, and leaving about the 10th of October. Besides its call-note, or chirp, it has a very pretty song.

Mr. Dall also remarks that they were quite common at Nulato in the spring, not arriving there, however, until about the first of June.

According to Mr. Dresser, it is found occasionally about San Antonio in winter, and Dr. Woodhouse says that it is also common in the Indian Territory in fall and winter. According to Mr. Audubon, it makes its appearance in Louisiana in November, and remains there until early spring. It is also abundant in South Carolina, arriving there in October and leaving in April.

This species was observed by Mr. Aiken in Colorado Territory for about three weeks following March 20, after which they were seen no more.

It breeds more or less abundantly in the northern and eastern portions of Maine. About Calais and in all the islands of the Bay of Fundy, and throughout New Brunswick and Nova Scotia, I found this by far the most common and familiar species, especially at Pictou, where it abounded in the gardens, in repeated instances coming within the outbuildings to build its nests. In a woodshed connected with the dwelling of Mr. Dawson, my attention was called to the nests of several of these birds, built within reach of the hand, and in places where the family were passing and repassing throughout the day. In Pictou they were generally called the Bluebird by the common people. On my ride from Halifax to Pictou, I also found these birds breeding by the roadside, often under the shelter of a projecting bank, in the manner of the *Passerculus sacanna*. I afterward found them nesting in similar situations among the White Mountains, the roadsides seeming to be a favorite situation. In habits and notes, at Pictou, they reminded me of the common *Spizella socialis*, but were, if anything, more fearless and confiding, coming into the room where the family were at their meals, and only flying away when they had secured a crumb of sufficient size.

In Western Massachusetts they breed in all parts of the range of Green Mountains, from Blandford to North Adams. They appear about Springfield in October and November, and are for a while abundant, and are then gone until March, when they return in full song, and remain numerous into April, and less common until into May. In the eastern part of the State they are found from October to late in May, with some irregularity and in varying numbers. Mr. Audubon did not meet with any on the coast of Labrador, and Dr. Cones did not find them so abundant as he expected, and did not observe any until the latter part of July, at which time the young were already hatched, and they were associated in small companies. They kept entirely in the thick woods, and seemed rather timid.

Their food is small berries, seeds of grasses and small plants, insects, and larvæ. They seek the latter on the ground, and in the winter are said to frequent the poultry-yards, and avail themselves of the services of the fowls in turning up the earth. On the ground they hop about in a peculiar manner, apparently without moving their feet. At night and during storms they shelter themselves in the thick branches of evergreens, and also in stacks of hay and piles of brushwood.

During the winter the Snowbird appears to be rather more numerous in the Middle and Southern States than in New England. In the former they appear late in October, at first on the borders of woods, searching for food among the fallen and decaying leaves. Later in the season, as the weather becomes colder, and the snow deprives them of this means of feeding, they resort to the roadsides and feed on the seeds of the taller weeds, and to the farm-houses and farm-yards, and even enter within the limits of large cities, where they become very tame and familiar. They are much exposed to attacks from several kinds of Hawks, and the apparent timidity they evince at certain times and places is due to their apprehensions of this danger. The sudden rustle of the wings of a harmless fowl will cause the whole flock to take at once to flight, returning as soon as their alarm is found to be needless, but repeated again and again when the same dreaded sounds are heard.

Neither Wilson, Nuttall, nor Audubon appear to have ever met with the nests or eggs of this bird, though the first met with them breeding both among the Alleghanies, in Virginia, and the highlands of Pennsylvania and New York. In Otsego County, in the latter State, Mr. Edward Appleton was the first to discover and identify their nest and eggs, as cited by Mr. Audubon in the third volume of his *Birds of America*. They were found in considerable numbers in the town of Otsego. Their nests were on the ground in sheltered positions, some of them with covered entrances. Their complement of eggs was four. One of their nests was sent me, and was characteristic of all I have since seen, having an external diameter of four and a half inches and a depth of two. The cavity was deep and capacious for the bird. The base and periphery of the nest were made of slender strips of bark, coarse straws, fine roots, and horsehair, lined with fine mosses and the fur of smaller animals. The eggs were of a rounded-oval shape; their ground-color is a creamy yellowish-white, marked with spots and blotches of a reddish-brown confluent around the larger portion of the egg, but rarely covering either end. They measure .75 by .60 of an inch, not varying in size from those of *J. oregonus*.

Junco hyemalis, var. aikeni, RIDGWAY.**WHITE-WINGED SNOWBIRD.**

SP. CHAR. Generally similar to *J. hyemalis*, but considerably larger, with more robust bill; two white bands on the wing, and three, instead of two, outer tail-feathers entirely white. No. 61302 ♂, El Paso Co., Colorado, December 11, 1871, C. E. Aiken: Head, neck, jugulum, and entire upper parts clear ash; the back with a bluish tinge; the lores, quills, and tail-feathers darker; middle and secondary wing-coverts rather broadly tipped with white, forming two conspicuous bands. Lower part of the breast, abdomen, and crissum pure white, the anterior outline against the ash of the jugulum convex; sides tinged with ash. Three lateral tail-feathers entirely white, the third, however, with a narrow streak of dusky on the terminal third of the outer web; the next feather mostly plumbeous, with the basal fourth of the outer web, and the terminal half of the inner, along the shaft, white. Wing, 3.40; tail, 3.20; culmen, .50; depth of bill at base, .30; tarsus, .80.

HAB. El Paso County, Colorado.

At first sight, this bird appears to be a very distinct species, being larger than any other North American form, and possessing in the white bands on the wing characters entirely peculiar. Its large size, however, we can attribute to its alpine habitat, agreeing in this respect, as compared with *J. hyemalis*, with the *J. alticola* of Guatemala, which we can only consider an alpine or somewhat local form of *J. cinereus*. That the white bands on the wing do not constitute a character sufficiently important to be considered of specific value is proved by the fact that in many specimens of *J. oregonus*, and occasionally in *J. hyemalis*, there is sometimes quite a distinct tendency to these bands in the form of obscure white tips to the coverts.

HABITS. But little is known as to the habits of this variety; probably they do not differ from those of its congeners. It was met with by Mr. C. E. Aiken, near Fountain, El Paso County, in Colorado Territory, in the winter of 1871-72. They were rare in the early winter, became rather common during the latter part of February and the first of March, and had all disappeared by the first of April. During winter only males were seen, but, in the spring, the females were the most numerous. They were usually seen singly, or in companies of two or three, and not, like the others, in larger flocks.

Junco oregonus, SCLATER.**OREGON SNOWBIRD.**

Fringilla oregona, TOWNSEND, J. A. N. Sc. VII, 1837, 188. — In Narrative, 1839, 345. — AUD. Orn. Biog. V, 1839, 68, pl. cccxviii. — *Struthus oregonus*, BON. List, 1838. — In Consp. 1850, 475. — NEWELL, Zool. Cal. & Or. Route; Rep. P. R. R. VI, iv, 1857, 88. — *Niphaea oregona*, AUD. Syn. 1839, 107. — In Birds Am. III, 1841, 91, pl. clxviii. — CAL. Mus. Mem. 1851, 131. — *Junco oregonus*, SCLATER, Pt. Zool. Soc. 1857, 7. — BAIRD, Birds N. Am. 1858, 466. — LORR, Pt. R. A. Inst. IV, 120 (British Columbia). — COOPER & SICKLEY, 202. — COLES, Pt. Phil. Ac. 1866, 85 (Arizona). — DALL &

BANNISTER, Tr. Ch. Ac. I, 1869, 284. — COOPER, Orn. Cal. I, 199. *Fringilla hudsonia*, LICHT. Beit. Faun. Cal. in Abh. Akad. Wiss. Berlin, for 1838, 1839, 424 (not *F. hudsonia*, FORSTER). "*Fringilla atrata*, BRANDT, Icon. Rosso-As. tab. ii, f. 8" (CAB.).

SP. CHAR. Head and neck all round sooty-black; this color extending to the upper part of the breast, but not along the sides under the wings, and with convex outline behind. Interseapular region of the back and exposed surface of the wing-coverts and secondaries dark rufous-brown, forming a square patch. A lighter, more pinkish tint of the same on the sides of breast and belly. Rest of under parts clear white. Rump brownish-ash. Upper tail-coverts dusky. Outer two tail-feathers white; the third with only an obscure streak of white. Bill flesh-color, dusky at tip. Legs flesh-color. Length about 6.50 inches; wing, 3.00.

HAB. Pacific coast of the United States to the eastern side of the Rocky Mountains, and north to Alaska. Stragglers as far east as Fort Leavenworth in winter and Great Bend of Missouri.

Sitka and Oregon specimens have the back of a darker rufous than those from California and the Middle Province, in which this portion of the body, as well as the sides, is paler, and in more abrupt contrast with the head.

Immature and the majority of winter specimens do not have the black of the head and neck so well defined, but edged above more or less with the color of the back, below with light ashy.

The Oregon Snowbird in full plumage is readily distinguishable from the eastern species by the purer white of the belly; the more sharply defined outline of the black of the head passes directly across the upper part of the breast, and is even convex in its posterior outline, without extending down the side of the breast, with its posterior outline strongly concave, as in *hyemalis*. The absence of black or ashy-brown under the wings, with the rufous tinge, are highly characteristic of *oregonus*. The head and neck are considerably blacker; the rufous of the back and wings does not exist in the other. The wings and quills are more pointed; the second quill usually longest, instead of the third, etc. The dusky of the throat reaches in *J. oregonus* only to the upper part of the breast; to its middle region in *hyemalis*.

Sometimes, in adult males, the middle and greater wing-coverts are faintly tipped with white, indicating two inconspicuous bands.

In a large series of *Juncos* collected at Fort Whipple, Arizona, by Dr. Coues, are several specimens so decidedly intermediate between *J. oregonus* and *J. caniceps* as to suggest the probability of their being hybrids; others, from Fort Burgwyn and Fort Bridger, are exactly like them. With the ashy head and jugulum, and black lores, as well as bright rufous back, of the latter, the sides are pinkish as in the former; while, as in this too, the posterior outline of the ash on jugulum is convex, not concave, and the rufous of the back has a tendency to tinge the wings, instead of being confined to the interseapulars. (See foot-note to synoptical table, p. 579.)

HABITS. Dr. Suckley found this bird extremely abundant in Oregon and Washington Territory, where it holds about the same position that the *hye-*

melis does in the Eastern States. Dr. Cooper states it to be a very common bird in Washington Territory, especially in the winter, when it comes about the houses and farms with precisely the same habits as the common Atlantic species. In the summer it is seen about Puget Sound, in which neighborhood it breeds. He met with young fledglings as early as May 24. At that season they were not gregarious, and were found principally about the edges of woods.

Mr. Ridgway also regards the western Snowbird as, in all appreciable respects, an exact counterpart of the eastern *hyemalis*. In summer he found it inhabiting the pine woods of the mountains, but in winter descending to the lowlands, and entering the towns and gardens in the same manner with the eastern species.

Dr. Cooper states this species to be numerous in winter in nearly every part of California. In the summer it resides among the mountains down to the 32d parallel. On the coast he has not determined its residence farther south than Monterey. The coolness of that locality, and its extensive forests of pines extending to the coast, favor the residence of such birds during the summer. At San Diego he observed them until the first of April, when they retired to the neighboring mountains. A few also were found in the Colorado Valley in the winter. On the Coast Mountains south of Santa Clara he found them breeding in large numbers in May, 1864. One nest contained young, just ready to fly, as early as May 13. This was built in a cavity among the roots of a large tree on a steep bank. It was made of leaves, grasses, and fine root-fibres. On the outside it was covered with an abundant coating of green moss, raised above the surface of the ground. The old birds betrayed the presence of the nest by their extreme anxiety. On the 20th he found another nest on the very summit of the mountains, supposed to be a second laying, as it contained but three eggs. It was slightly sunk in the ground under a fern, and formed like the other, but with less moss around its edge. It was lined with cows' and horses' hair. The eggs were bluish-white, with blackish-brown spots of various sizes thickly sprinkled around the larger end, and measuring .74 by .60 of an inch.

The only song Dr. Cooper noticed, of this species, was a faint trill much like that of the *Spizella socialis*, delivered from the top of some low tree in March and April. At other times they have only a sharp call-note, by which they are distinguishable from other Sparrows. While some migrate far to the south in winter, others remain as far north as the Columbia River, frequenting, in large numbers, the vicinity of barns and houses, especially when the snow is on the ground. They raise two broods in a season.

Dr. Coates found this species a very common winter resident in Arizona, arriving at Fort Whipple about October 10, soon becoming very abundant, and continuing so until the second week in April. Stragglers were seen until May 10.

Dr. Woodhouse also observed numbers of the western Snowbird on the San Francisco Mountains, in the month of October, where they were very

abundant. Many specimens were obtained in Sitka by Mr. Bischoff. None have so far been recorded from the Aleutian Islands.

Dr. Kennerly frequently saw these birds near the Pueblo of Zuñi in New Mexico; in the months of October and November they were very abundant among the cedars to the westward of that settlement as far as the Little Colorado. Dr. Heermann also met with them near Fort Yuma in December, having previously noticed them during the fall, migrating in large flocks.

Mr. Aiken frequently found this species throughout the winter in Colorado. It was very common during March and the first of April. By May only a few straggling females were seen, and then they all disappeared.

The nests of this species have a general resemblance in structure to those of the common *hyemalis*. They are well constructed and remarkably symmetrical, made externally of mosses and other coarse materials, within which is very nicely woven an inner nest of fine, bent stems of grasses, lined with hair. The eggs, four or five in number, resemble those of the *hyemalis*, but are lighter. They have a ground-color of greenish-white, marked about the larger end with fine dots of reddish-brown. Their measurement is .75 by .60 of an inch.

Junco. caniceps, BAIRD.

RED-BACKED SNOWBIRD.

Struthus caniceps, WOODHOUSE, Pr. A. N. Sc. Phila. VI, Dec. 1852, 202 (New Mexico and Texas). — IB. Sitgreaves's Report Zuñi & Colorado, 1853, 83, pl. iii. *Junco caniceps*, BAIRD, Birds N. Am. 1858, 468, pl. lxxii, f. 1. — COOPER, Orn. Cal. I, 201.

SP. CHAR. Bill yellowish; black at the tip. Above ashy (of the same shade before and behind); the head and neck all round of this color, which extends (paling a little) along the sides, leaving the middle of the belly and crissum quite abruptly white. Lores conspicuously but not very abruptly darker. Interscapular region abruptly reddish chestnut-brown, which does not extend on the wings, and makes a triangular patch. Two outer tail-feathers entirely white; third with a long white terminal stripe on the inner web. Young streaked with blackish above and below, except along middle of belly and behind. Length, 6.00; wing, 3.23; tail, 3.04.

HAB. Rocky Mountains; from Black Hills to San Francisco Mountains, Arizona. Wahsatch and Uintah Mountains (RIDGWAY).

This species is similar to the common *J. hyemalis* in color, though paler; the tint of the under parts and sides is not quite so dark, and is less abruptly defined against the white. The conspicuous chestnut patch on the back and the dusky lores will distinguish them. The edge of the outer web of the third tail-feather is brown, not white. It differs from *oregonus* and *cinereus* in having no chestnut on the wings, especially the tertials, and from the former in the extension of the ash of the neck along the sides and much lighter head.

Young birds are streaked above and below as in other species; they may be distinguished from those of *cinereus* by the rufous being confined to the interscapular region, the same as in the adult.

The type skin of *Junco dorsalis* of Dr. Henry (see foot-note to synoptical table, p. 580) differs mainly in having the whole upper mandible entirely black, as in *J. cinereus*; and, as in the latter, the jugulum is pale ash, fading gradually into the white of the abdomen, instead of deep ash abruptly defined. It is very probably, as suggested by Mr. Ridgway, a hybrid with *J. cinereus*.

HABITS. This species was first discovered and described by Dr. Woodhouse from specimens obtained by him among the San Francisco Mountains in Arizona. When procured, it was feeding in company with the *Junco oregonus* and various species of *Parus*. Its habits appeared to be very similar to those of the western Snowbird, as well as to those of the common *J. hyemalis*.

Dr. Cones states that he found this bird a not very common winter resident at Fort Whipple, where its times of arrival and departure, as well as its general habits, were identical with those of *J. oregonus*, with which it very freely associated. From this we may naturally infer that in New Mexico and Arizona it appears only as a winter visitant, and that in summer it goes elsewhere to breed. Its summer resorts, as well as our knowledge of its breeding-habits, nest, and eggs, remain to be determined, or are only imperfectly known. It evidently retires to the highlands and to mountain regions to breed, and probably has a much more extended habitat than that of which we now have any knowledge. Upon this problem Mr. Ridgway's observations have already shed some valuable and suggestive light. He met with this bird only among the pine woods of the Wahsatch Mountains, where, however, it was a very common bird, and where it was also breeding. Its manners and notes were scarcely different from those of *J. oregonus*. It is, however, a shyer bird than the latter, and its song, which is only a simple trill, is rather louder than that of either the *hyemalis* or the *oregonus*.

Dr. Cones writes me that both "the Gray-head and the Oregon Snowbirds are common species about Fort Whipple in winter, arriving about the middle of October, and remaining in numbers until early in April, when they thin off, although some may usually be observed during the month, and even a part of the next. *Oregonus* far outnumber *cinereus*. So far as I could see, their habits are precisely the same as those of the eastern Snowbird. During snow-storms they used to come familiarly about our quarters, and I once captured several of both species, enticing them into a tent in which some barley had been strewn, and having the flap fixed so that it could be pulled down with a string in a moment. They always associated together, and once, on firing into a flock, I picked up a number of each kind, and one *Junco hyemalis*. The latter can only be considered a straggler in this region, although I secured three specimens one winter."

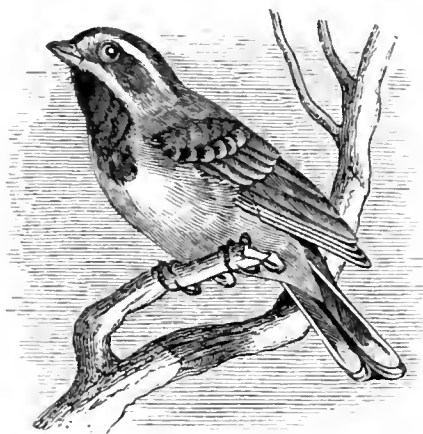
This species was very rare in Colorado, according to Mr. Aiken, in the winter of 1871-72, but became common in March, and a few remained up to the 3d of May. No females of this species were observed by him.

Mr. J. A. Allen mentions first meeting with this species at an elevation of seven thousand feet, and from that height it was common, on the slopes of Mount Lincoln, to the extreme limit of the timber line.

GENUS **POOSPIZA**, CABANIS.

Poospiza, CABANIS, Wiegmann's Archiv, 1847, 1, 349. (Type, *Emberiza nigro-rufa*, D'ORB., or *Pipilo personata*, Sw.)

GEN. CHAR. Bill slender, conical, both outlines gently curved. Under jaw with the edges considerably inflected; not so high as the upper. Tarsi elongated, slender; considerably longer than the middle toe. Toes short, weak; the outer decidedly longer than the inner, but not reaching to the base of the middle claw. Hind toe about equal to the middle without its claw. All the claws compressed and moderately curved. Wings rather long, reaching about over the basal fourth of the exposed portion of the rather long tail. Tertiaries and secondaries about equal, and not much shorter than the lengthened primaries; the second to fifth about equal and longest; the first considerably shorter, and longer than the seventh. Tail long, slightly emarginate, graduated; the outer feather abruptly shorter than the others. Feathers broad, linear, and rather obliquely truncate at the ends, with the corners rounded.



Poospiza bilineata.

Color. Uniform above, without streaks. Beneath white, with or without a black throat. Black and white stripes on the head.

We are by no means sure that the two North American specimens here indicated really belong to the genus *Poospiza*, but we know no better position for them. They may be distinguished as follows:—

COMMON CHARACTERS. Lores and beneath the eye black, a white orbital ring, white spot above the lore (in *bilineata* continued back in a superciliary stripe); a white maxillary stripe. Lateral tail-feathers, with outer web and terminal border of inner, hoary or pure white.

A. Throat black in adult; sides not streaked.

A continuous white superciliary stripe.

1. **P. bilineata**. Black patch of throat covering jugulum, with a convex outline behind. Crown and back without streaks, concolored. Wing-coverts without white bands; lesser coverts ash. Wing, 2.75; tail, 2.85; bill, from nostril, .37; tarsus, .65.

No white superciliary stripe.

2. **P. mystacalis**. Black patch of throat not extending on jugulum; its posterior outline truncated. Crown and back with distinct black streaks. Back scapulars and rump rufous in contrast with the ash of head and neck. Wing-coverts with two narrow, sharply defined white bands; lesser coverts black. Wing, 2.80; tail, 3.30; bill, .40; tarsus, .80. *Hab.* Mexico.

B. Throat white; sides streaked.

3. *P. belli*. No white superciliary stripe. A dusky spot in middle of the breast. Upper parts ashy, concolored, with indistinct streaks on the back. Wings somewhat more brownish, the coverts with two indistinct light (not white) bands.

a. Wing, 2.50; tail, 2.50; bill, .31; tarsus, .74. Dorsal streaks obsolete. *Hab.* California. var. *belli*

β. Wing, 3.20; tail, 3.20; bill, .35; tarsus, .76. Dorsal streaks distinct. *Hab.* Middle Province of United States. var. *nevadensis*.

Poospiza bilineata, SCLATER.**BLACK-THROATED SPARROW.**

Emberiza bilineata, CASSIN, Pr. A. N. Sc. Ph. V, Oct. 1850, 104, pl. iii, Texas. — *Id.* Illust. I, v, 1854, 150, pl. xxiii. *Poospiza bilineata*, SCLATER, Pr. Zool. Soc. 1857, 7. — BAIRD, Birds N. Am. 1858, 470. — *Id.* Mex. Bound. II, Birds, 15. — HEERM. X, c. 14. — COOPER, Orn. Cal. I, 1870, 203.

Sp. CHAR. Above uniform unspotted ashy-gray, tinged with light brown; purer and more plumbeous anteriorly, and on sides of head and neck. Under parts white, tinged with plumbeous on the sides, and with yellowish-brown about the thighs. A sharply defined superciliary and maxillary stripe of pure white, as also the lower eyelid, the former margined internally with black. Loral region black, passing insensibly into dark slate on the ears. Chin and throat between the white maxillary stripes black, ending on the upper part of the breast in a rounded outline. Tail black, the lateral feathers edged externally and tipped on inner web with white. Bill blue. Length, 5.40; wing, 2.75; tail, 2.90. Sexes alike.

*Poospiza bilineata*

HAB. Middle Province of United States north to 10°, between Rocky Mountains and Sierra Nevada. (As far west as Janos and the Mohave villages.) Matamoros (rare at San Antonio: DRESSER, Ibis, 1865, 488).

This species in external form is very similar to *P. belli*, and will probably fall in the same genus. The cutting edges of the bill are much inflexed. The first quill is shorter than the sixth. The tail is a good deal rounded; the feathers broad.

The white maxillary stripe does not come quite to the base of the under jaw, which there is black. There is a hoary tinge on the forehead. The white superciliary stripes almost meet on the forehead.

In the immature bird the throat is white with a dusky clouding along each side; the upper part of the breast streaked with brown.

HABITS. The Black-throated Sparrow, generically associated with Bell's Finch, has several well-marked distinctive peculiarities in habits. Their eggs are also totally unlike those of the present species, being much more

like those of the *Peucaea* and of *Leucosticte griseinucha*, and, like them, white and unspotted.

This species was first described by Mr. Cassin from specimens obtained in Western Texas by John W. Audubon, and its habitat was at first supposed to be restricted to the valleys of the Rio Grande and the Gila, but more recent explorations show it to have a much wider distribution. It is found from Western Texas through part of Mexico, New Mexico, the Indian Territory, and Arizona, to Southern California, and towards the north throughout the region of the Great Basin to an extent not yet fully determined. In portions at least of this territory it is migratory, and only resident in the summer months.

Mr. Dresser found this Sparrow very abundant during July and August in the mesquite thickets in the town of Matamoras. In December it was equally common at Eagle Pass, but at San Antonio it was quite a rare bird. He only observed it on two or three occasions at a rancho on the Medina River, and late in June a nest and four eggs were obtained. Between Laredo and Matamoras, after crossing the Nueces, he found these birds very numerous, and near Laredo met with several nests, some containing young and some eggs nearly hatched. One taken on the 20th of July contained three fresh eggs, probably indicating a second laying. This nest was in a low bush, carefully concealed. It was composed of straws and lined with fine roots. The eggs, when fresh, were nearly white, with a delicate bluish tinge. On his journey down the river he found many nests, all empty or containing young. Some of these were partially lined with cotton. Though not wild, the birds were so restless that he found it difficult to shoot them. Dr. Woodhouse obtained one specimen on the Rio Pedro, in Texas.

In Mexico this Sparrow was found by Lieutenant Couch to be numerous in parts of Tamaulipas, Nueva Leon, Coahuila, and other States on the Rio Grande, immediately south and west of the limits of the territory of the United States. It was first seen at Santa Rosalio, and specimens obtained, though none were noticed at Brownsville, only twenty miles east, during a month's residence. At Charco Escondido, forty miles farther in the interior, it was very plentiful, and although it was early in March, had already reared a brood of young, one specimen appearing to be a young bird only a few weeks old. Its favorite home appeared to be the scattered mesquite, on the plains east of the Sierra Madre. During the warm hours of the day it does not seek the shade, but may always be found chirping and hopping from one bush to another. South of Cadoreita the birds disappeared, but after a month's loss of their company he again met with them among some flowering *Leguminosa*, between Pesquieria and Rinconada. He thus found it several times entirely absent from districts of considerable extent, but always reappearing again throughout his journey. The usual note of this bird, at the season in which he met with it, was a simple chirp; but on one occasion, having halted during a norther in Tamaulipas, he heard a "gay little black-throated

fellow," regardless of the bitter wind, from the top of a yellow mimosa then in bloom, give utterance to a strain of sprightly and sweet notes, that would compare favorably with those of many more famed songsters.

Dr. Cones found this Sparrow very abundant in the southern and western portions of Arizona, though rare at Fort Whipple, where the locality was unsuited to it, as it seemed to prefer open plains, grassy or covered with sage-brush.

Mr. J. H. Clarke, who met with these birds in Tamaulipas, Texas, and New Mexico, speaks of them as abundant and widely distributed. He found them on the lower Rio Grande, but more abundantly in the interior, seeming to prefer the stunted and sparse vegetation of the sand-hills and dry plains to the cottonwood groves and willow thickets of the river valleys, where they were never seen. They would be very inconspicuous did not the male occasionally perch himself on some topmost branch and pour forth a continuous strain of music. In the more barren regions they were the almost exclusive representatives of the feathered tribes.

Dr. Heermann first remarked this Finch near Tucson, in Arizona, where he found it associated with other Sparrows in large flocks. They were flying from bush to bush, alighting on the ground to pick up grass-seeds and insects. They were quite numerous, and he traced them as far into Texas as the Dead Man's Hole, between El Paso and San Antonio.

Dr. Cooper found a few of these birds on the treeless and waterless mountains that border the Colorado Valley, in pairs or in small companies, hopping along the ground, under the scanty shrubbery. In crossing the Providence Range, in May, Dr. Cooper found their nest, containing white eggs.

Both species of *Poospiza*, the *belli* and the *bilineata*, according to Mr. Ridgway, are entirely peculiar in their manners, habits, and notes. Both, he states, are birds characteristic of the arid artemisia plains of the Great Basin, and, with the *Eremophila cornuta*, are often the only birds met with on those desert wastes. The two species, he adds, are quite unlike in their habits and manners. They each have about the same extent of habitat, and even often frequent the same locality. While the *P. bilineata* is partial to dry sandy situations, inhabiting generally the arid *mesa* extending from the river valleys back to the mountains, the *P. belli* is almost confined to the more thrifty growth of the artemisia, as found in the damper valley portions. The *P. belli* is a resident species, and even through the severest winters is found in abundance. The *P. bilineata* is exclusively a summer bird, one of the latest to come from the South, and much the more shy of the two; its manners also are quite different.

Both birds have one common characteristic, which renders them worthy of especial remark. This is the peculiar delivery and accent, and the strange sad tone of their spring song, which, though unassuming and simple, is indeed strange in the effect it produces. This song, so plaintive and mournful, harmonizes with the dull monotony of the desert landscape.

Mr. Ridgway states that the *P. bilineata* is not so abundant as the other species, and is more retiring in its habits. It principally frequents the desert tracts and sandy wastes, on which are found only the most stunted forms of sage-brush. Its song, though quite simple, is exceedingly fine, its modulation being somewhat like *wut'-wut'-ze-c-e-e-e-c*, the first two syllables being uttered in a rich metallic tone, while the final trill is in a lower key, and of the most liquid and tremulous character imaginable. This simple chant is repeated every few seconds, the singer being perched upon a bush. He adds that this bird arrives on the Truckee Reservation about the 13th of May. The nest is built in sage-bushes, and the eggs are found from the 7th to the 21st of June. The nests are usually about one foot from the ground, or thereabouts.

The eggs vary in size from .70 by .55 of an inch to .75 by .60. They are of a rounded-oval shape, and of a pure white with a slight tinge of blue, somewhat resembling the eggs of the Bachman Finch.

Poospiza belli, SCLATER.

BELL'S SPARROW.

Emberiza belli, CASSIN, PR. A. N. SC. PHILA. V, Oct. 1850, 104, pl. iv (San Diego, Cal.).

Poospiza belli, SCLATER, PR. ZOÖL. SOC. 1857, 7. — BAIRD, BIRDS N. AM. 1858, 470. —

HEERM. X, s. p. 46. *Zonotrichia belli*, ELLIOT, ILLUST. BIRDS N. AM. I, pl. xiv. —

COOPER, ORN. CAL. I, 204.

SP. CHAR. Upper parts generally, with sides of head and neck, uniform bluish-ash, tinged with yellowish-gray on the crown and back, and with a few very obsolete dusky streaks on the interscapular region. Beneath pure white, tinged with yellowish-brown on the sides and under the tail. Eyelids, short streak from the bill to above the eye, and small median spot at the base of culmen, white. A stripe on the sides of the throat and spot on the upper part of the breast, with a few streaks on the sides, with the loreal space and region round the eyes, plumbeous-black. Tail-feathers black; the outer edged with white. Wing-feathers all broadly edged with brownish-yellow; the elbow-joint tinged with yellowish-green. Bill and feet blue. Length, 5.70; wing, 2.80; tail, 2.90. (Largest specimen, 6,338 ♂, Cosumnes River).

HAB. Southern California.

The colors are softer and more blended in the autumn; the young are obsoletely streaked on the breast.

HABITS. Bell's Finch has apparently a more restricted distribution than the Black-throated species, and is resident wherever found. It has been met with at Posa Creek, Cal., by Dr. Heermann, at Fort Thorn by Dr. T. C. Henry, and along the Colorado River by Drs. Kennerly and Möllhausen. It has likewise been found in Southern California, as far north as Sacramento Valley, and in the valley of the Gila.

Dr. Cooper states that all the extensive thickets throughout the southern half of California are the favorite resorts of this bird. There they apparently live upon small seeds and insects, indifferent as to water, or

depending upon what they obtain from dews or fogs. They reside all the year in the same localities, and were also numerous on the island of San Nicolas, eighty miles from the mainland. In spring the males utter, as Dr. Cooper says, a low monotonous ditty, from the top of some favorite shrub, answering each other from long distances. Their nest he found about three feet from the ground, composed of grasses and slender weeds, lined with hair and other substances. The eggs, four in number, he describes as pale greenish, thickly sprinkled over with reddish-brown dots. At San Diego he found the young hatched out by May 18, but thinks they are sometimes earlier. It is also a common bird in the chaparral of Santa Clara Valley, and also, according to Dr. Heermann, along the Cosumnes River.

In Arizona, according to Dr. Cones, it is rather uncommon about Fort Whipple, owing to the unsuitable nature of the locality, but is abundant among the sage-brush of the Gila Valley, where it keeps much on the ground, and where its movements are very much like those of a *Pipilo*.

Drs. Kemmerly and Möllhausen met with these Sparrows on the Little Colorado River, in California, December 15. They were found during that month along the banks of the river wherever the weeds and bushes were thick. It was never observed very far from the water, and its food, at that season, seemed to consist of the seeds of various kinds of weeds. Its motions were quick, and, when started up, its flight was short, rapid, and near the earth.

Dr. Heermann states that in the fall of 1851 he found this species in the mountains bordering the Cosumnes River, and afterwards on the broad tract of arid land between Kerr River and the Tejon Pass, and again on the desert between that and the Mohave River. He often found them wandering to a great distance from water. With only a few exceptions, these were the only birds inhabiting the desolate plains, where the artemisia is the almost exclusive vegetation. When undisturbed, it chants merrily from some bush-top, but, at the approach of danger, drops at once to the ground and disappears in the shrubbery or weeds. Its nest he found built in a bush, composed of twigs and grasses, and lined with hair. The eggs, four in number, he describes as of a light greenish-blue, marked with reddish-purple spots, differing in intensity of shade.

Poospiza belli, var. nevadensis, RIDGWAY.

ARTEMISIA SPARROW.

Poospiza belli, var. *nevadensis*, RIDGWAY, Report on Birds of 40th Parallel.

SP. CHAR. Resembling *P. belli*, but purer ashy above, with the dorsal streaks very distinct, instead of almost obsolete. Wing, 3.20 (instead of 2.50); tail, 3.20 (instead of 2.50); bill (from forehead), .35; tarsus, .56. (Type, No. 53,516 ♂, Western Humboldt Mountains, Nev. United States Geol. Expl. 40th Par.)

Young. Streaked above, the crown obsolete, the back distinctly. Whole breast and sides with numerous short dusky streaks upon a white ground. Markings about the head indistinct, wing-bands more distinct than in the adult.

HAB. Middle Province of United States, north to beyond 40° (resident).

The difference in size between the race of the Great Basin and that of the southern Pacific Province, of this species, is quite remarkable, being much greater than in any other instance within our knowledge. This may, perhaps, be explained by the fact that the former is not migratory,

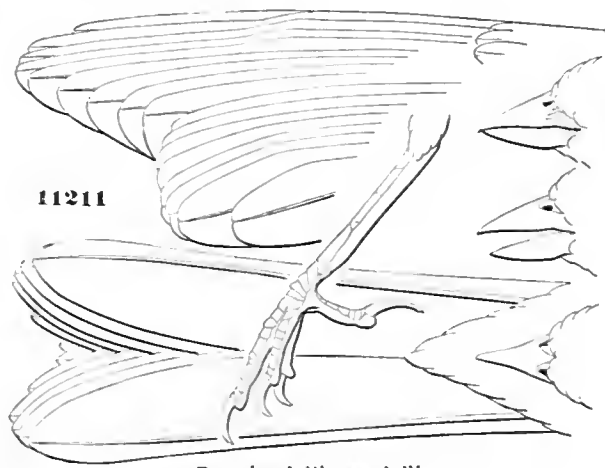
but resident even in the most northern part of its range; while the California one is also resident, and an inhabitant of only the southern portion of the coast region, not reaching nearly so far north as the race of the interior.

The coloration of the two races is quite identical, though in all specimens of var. *belli* the dorsal streaks are obsolete, sometimes even apparently wanting, while in the var. *nevadensis* they are always conspicuous. The former appears to be more brownish above than the latter.

HABITS. These birds, Mr. Ridgway states, have a very general distribution, extending as far west as the eastern base of the Sierra Nevada. At Carson City, February 27, he heard for the first time their sweet sad chant. A week later he found the sage-brush full of these birds, the males being in full song and answering one another from all directions. In walking through the sage-brush these Sparrows were seen on every side, some running upon the ground with their tails elevated, uttering a chipping twitter, as they sought to conceal themselves behind the shrubs. Some were seen to alight upon the tops of dead stalks, where they sit with their tails expanded almost precisely after the manner of the Kingbird. The song of this bird is feeble, but is unsurpassed for sweetness and sadness of tone. While its effect is very like the song of a Meadow Lark singing afar off, there is, besides its peculiar sadness, something quite unique in its modulation and delivery. It is a chant, in style somewhat like the spring warbling of the Shore Lark.

On the 24th of March, at Carson City, he found these Sparrows very abundant and everywhere the predominating species, as it was also the most unsuspicious and familiar. It was even difficult to keep them from under the feet. A pair would often run before him for a distance of several rods with their unexpanded tails elevated, and when too nearly approached would only dodge in among the bushes instead of flying off.

On the 9th of April, walking among the sage-brush near Carson City, Mr. Ridgway found several nests of this Sparrow, the female parent in each



Poospiza belli, var. *belli*.

instance betraying the position of her nest by running out, as he approached, from the bush beneath which it was concealed. With elevated tail, running rapidly and silently away, they disappeared among the shrubbery. In such cases a careful examination of the spot was sure to result in finding an artfully concealed nest, either embedded in the ground or a few inches above it in the lower branches of the bush. He did not find this species east of the northern end of Great Salt Lake, nor was it seen in the neighborhood of Salt Lake City, where the other species was so abundant.

The eggs of this species differ very essentially from those of the *P. bilineata*. They are oblong in shape, have a light greenish ground, marked all over the egg with very fine dots of a reddish-brown, and around the larger end with a ring of confluent blotches of dark purple and lines of a darker brown, almost black. They measure .80 by .60 of an inch. They resemble very closely a not uncommon variety of the eggs of the *Spizella pusilla*.

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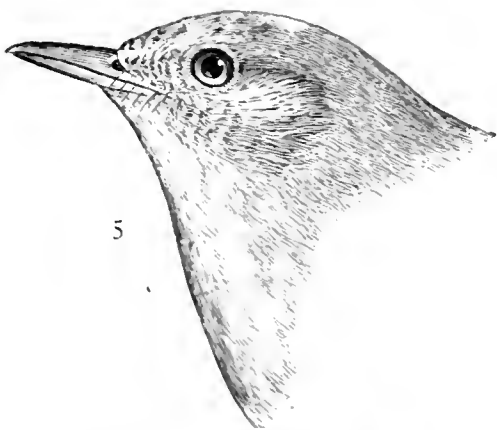
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<i>philadelphica</i> ,	"	"	367, " " 4	<i>(Jur.)</i>	"	"	" " 12
<i>swainsoni</i> ,	"	"	371.	<i>leucophrys</i> , <i>(Jur.)</i>	♂	"	566, " " 9
<i>Xanthocephalus icterocephalus</i> ,				<i>"</i>	♂	"	" " 10
♂	II.	167, pl. 32,	" 9	<i>querula</i> , <i>(Ad.)</i>	♂	"	577, pl. 26, " 4
" ♀	"	" pl. 33,	" 9	<i>(autumn)</i>	"	"	" " 7
<i>Xanthoura luxuosa</i> ,	"	295, pl. 42,	" 1				



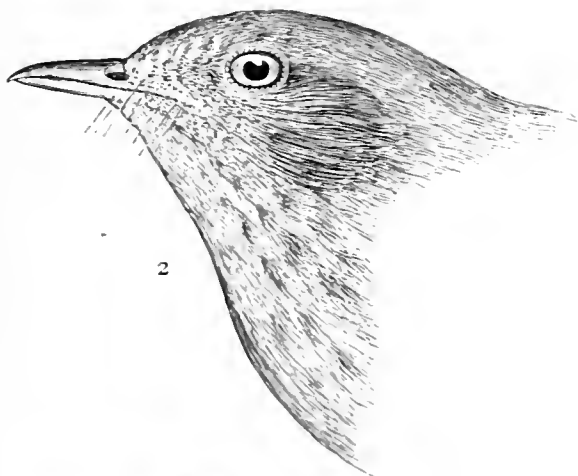
PLATE I.



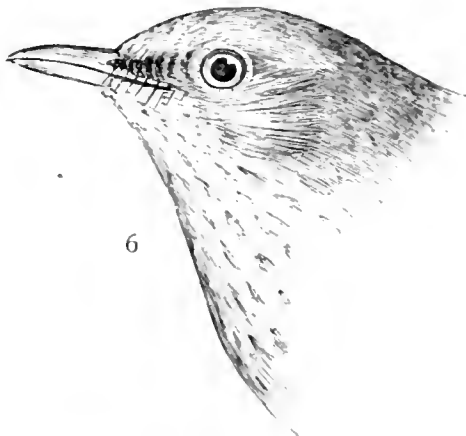
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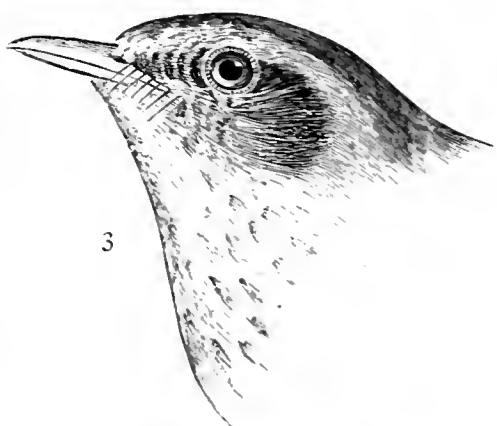
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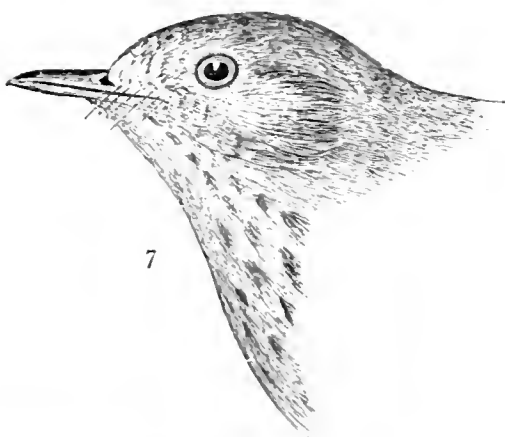
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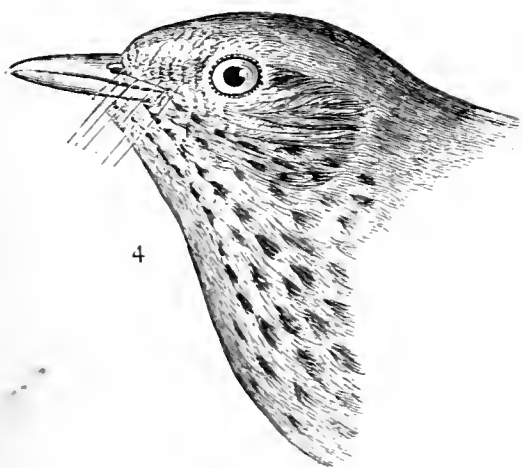
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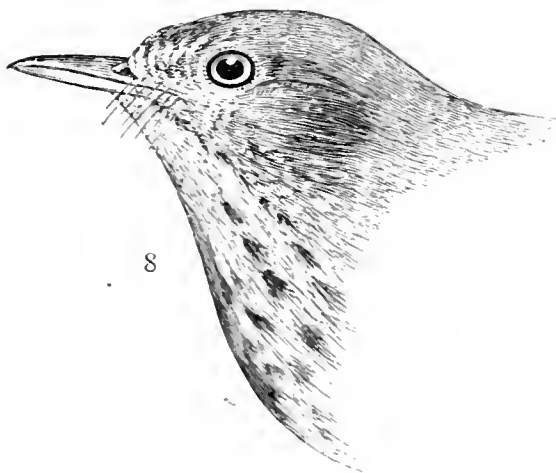
3



7



4



8

1. *Turdus mustelinus*, *Om.* Penn., 1570.
2. " *ustulatus*, *Nutt.* Oregon, 2042.
3. " *aliciae*, *Baird.* Illinois, 10084.
4. " *swainsonii*, *Cab.* Penn., 981.

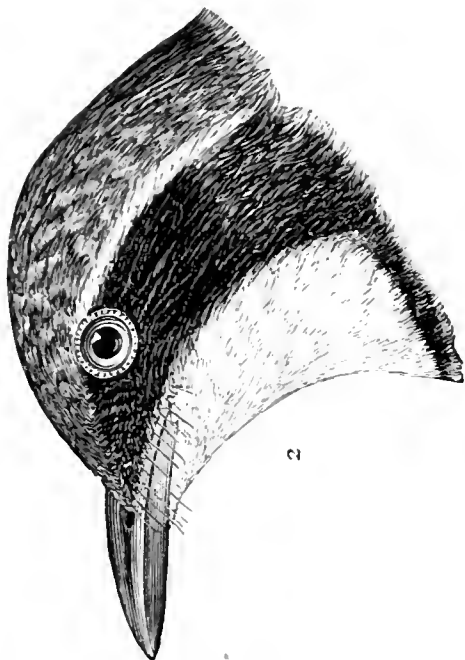
5. *Turdus fuscescens*, *Steph.* D. C., 28231.
6. " *pallasii*, *Cab.* Penn., 2146.
7. " *nanus*, *Aud.* Cala., 17997.
8. " *auduboni*, *Baird.* Rocky Mts., 10886.

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PLATE II.



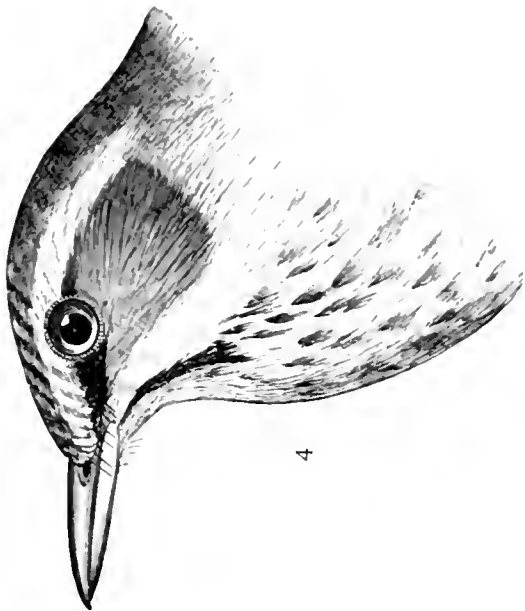
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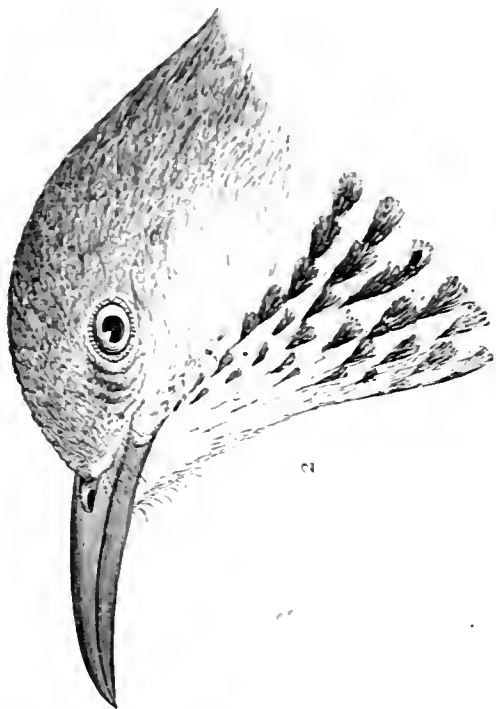
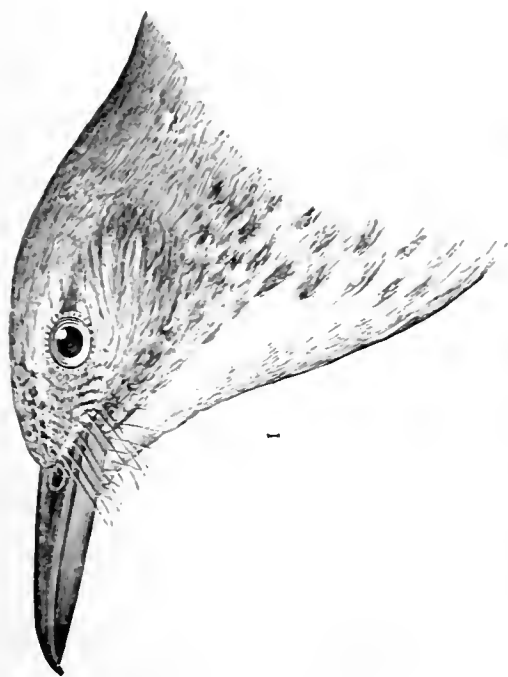
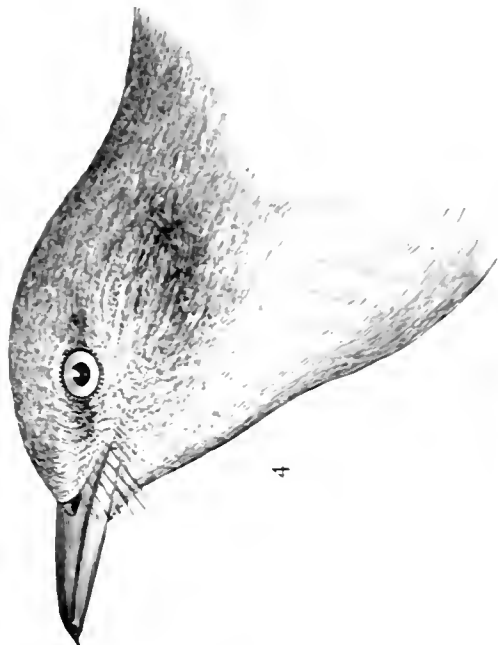
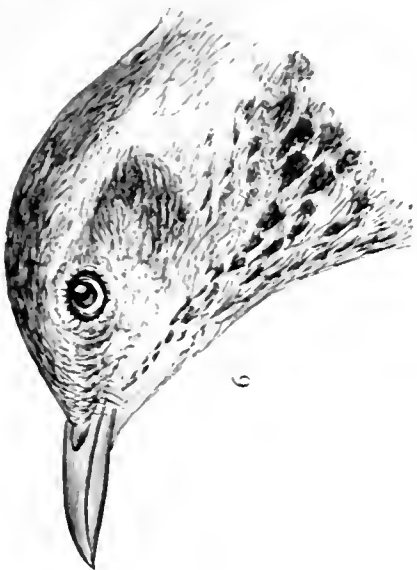


4

1. *Turdus confinis*, *Baird*. Cape St. Lucas, 23789.
2. " *neivius*, *Gün.* Cala., 21463.

3. *Turdus migratorius*, *Lin.* Penn., 1351.
4. " *ilicis*, *Lin.* Europe.

PLATE III.



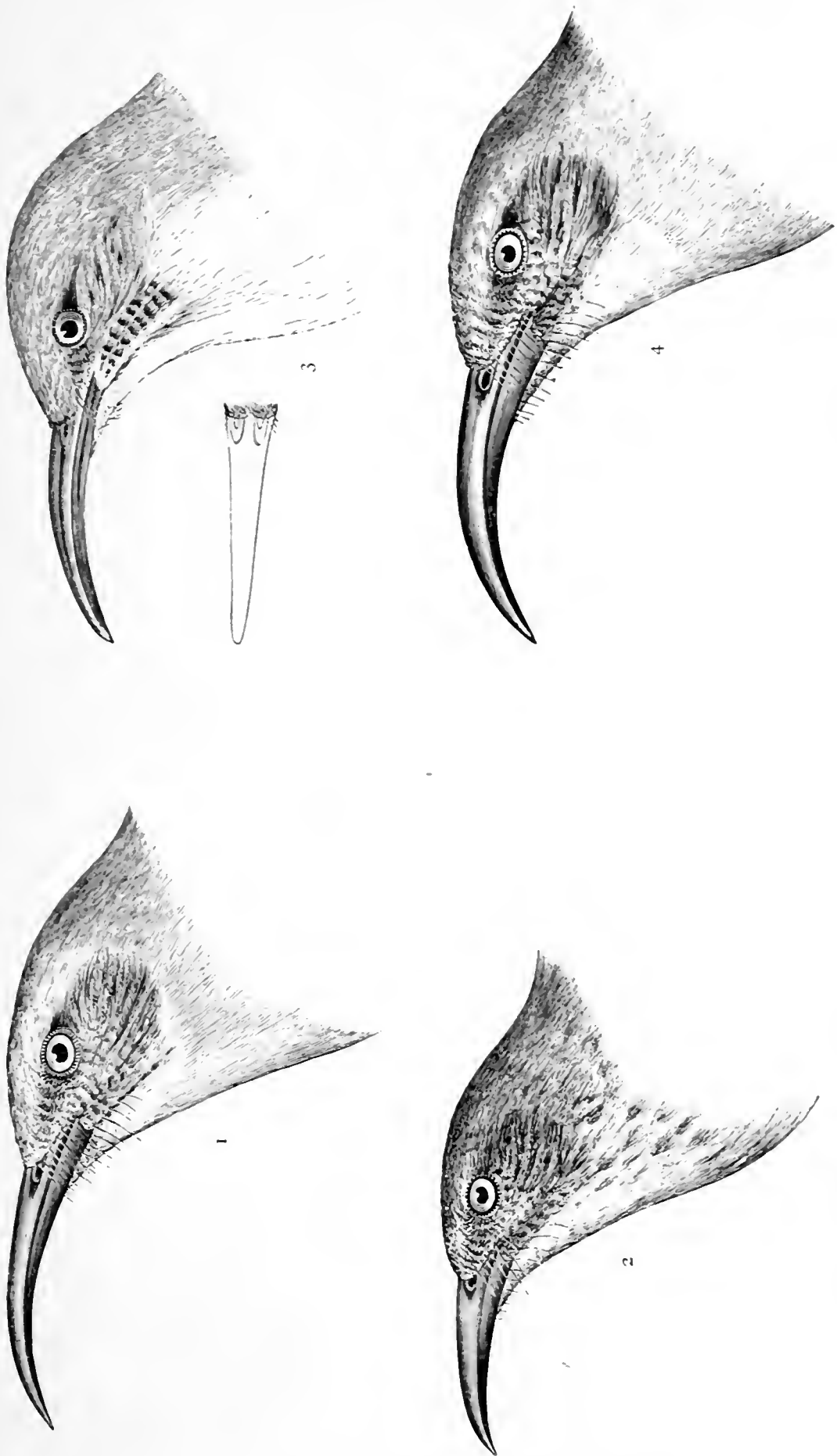
5. *Galoscopes carolinensis*, *Caban.* Rocky Mts., 38425.
6. *Oreoscoptes montanus*, *Baird.* Nevada, 53424.

3. *Harporhynchus curvirostris*, *Caban.* Texas, 7200.
4. *Mimus polyglottus*, *Baird.* Penn., 12441.

1. *Harporhynchus rufus*, *Caban.* Penn., 2261.
2. " *longirostris*, *Caban.* Texas, 4916.

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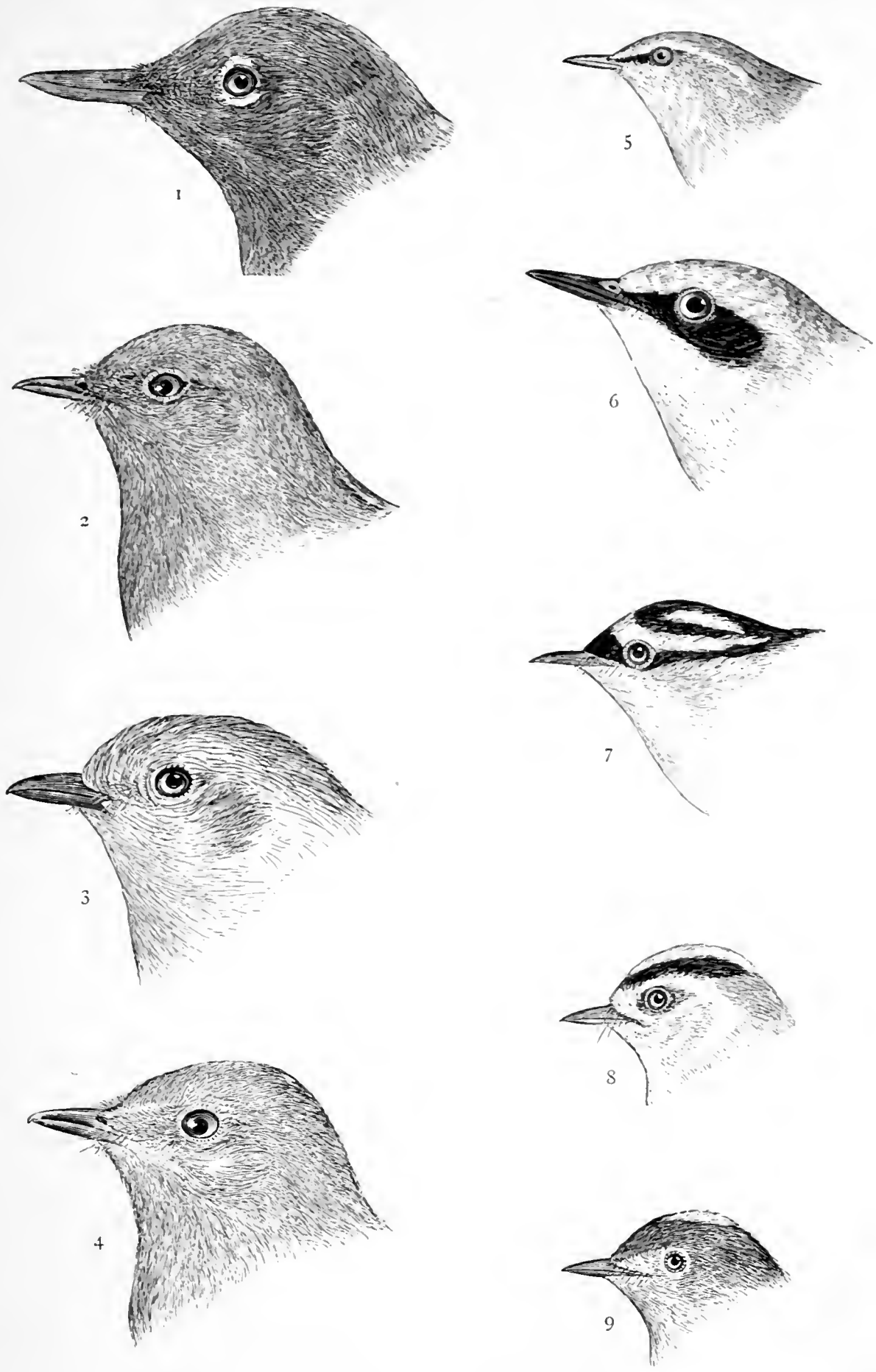
PLATE IV.



1. *Harporhynchus crissalis*, *Henry*. Cal., 1153.
2. " *cinereus*, *Xantus*. C. St. L., 2634.
3. *Harporhynchus lecontei*, *Bonap.* Ariz., 49718.
4. " *redivivus*, *Caban.* Cal., 3732.



PLATE V.

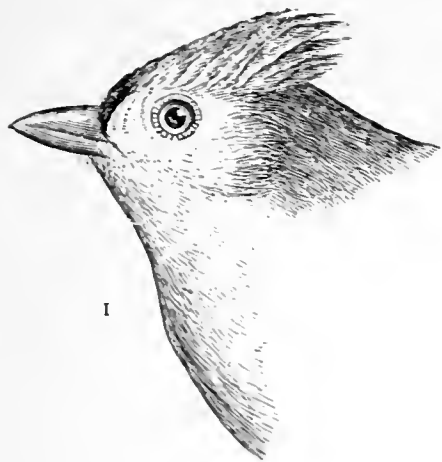


1. *Cinclus mexicanus*, Sw. N. M., 8496.
2. *Sialia mexicana*, Sw. Cal., 10623.
3. " *sialis*, Baird. D. C., 23245.
4. " *arctica*, Sw. Rocky Mts., 18319.

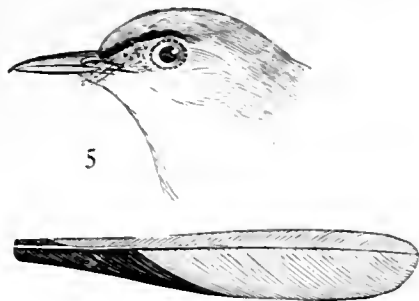
5. *Phyllopneuste borealis*. Alaska, 43909.
6. *Saxicola oenanthe*, Bechst. France, 18959.
7. *Regulus cuvieri*, Aud. (From Aud.'s plate.)
8. " *satrapa*, Licht. D. C., 1160.
9. " *calendula*, Licht. Penn., 736.



PLATE VI.



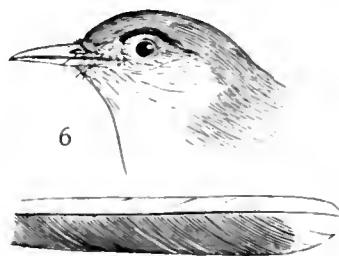
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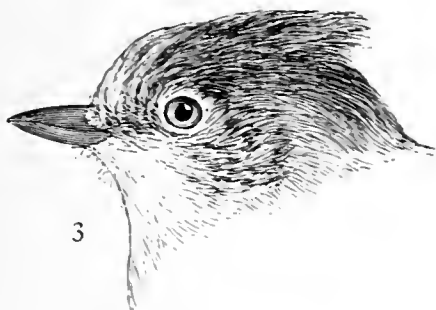
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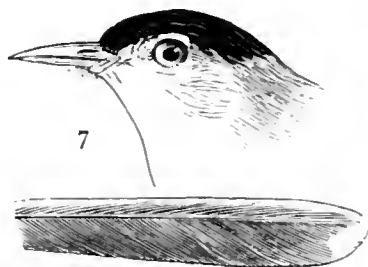
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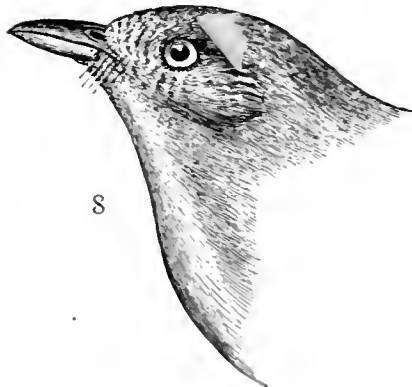
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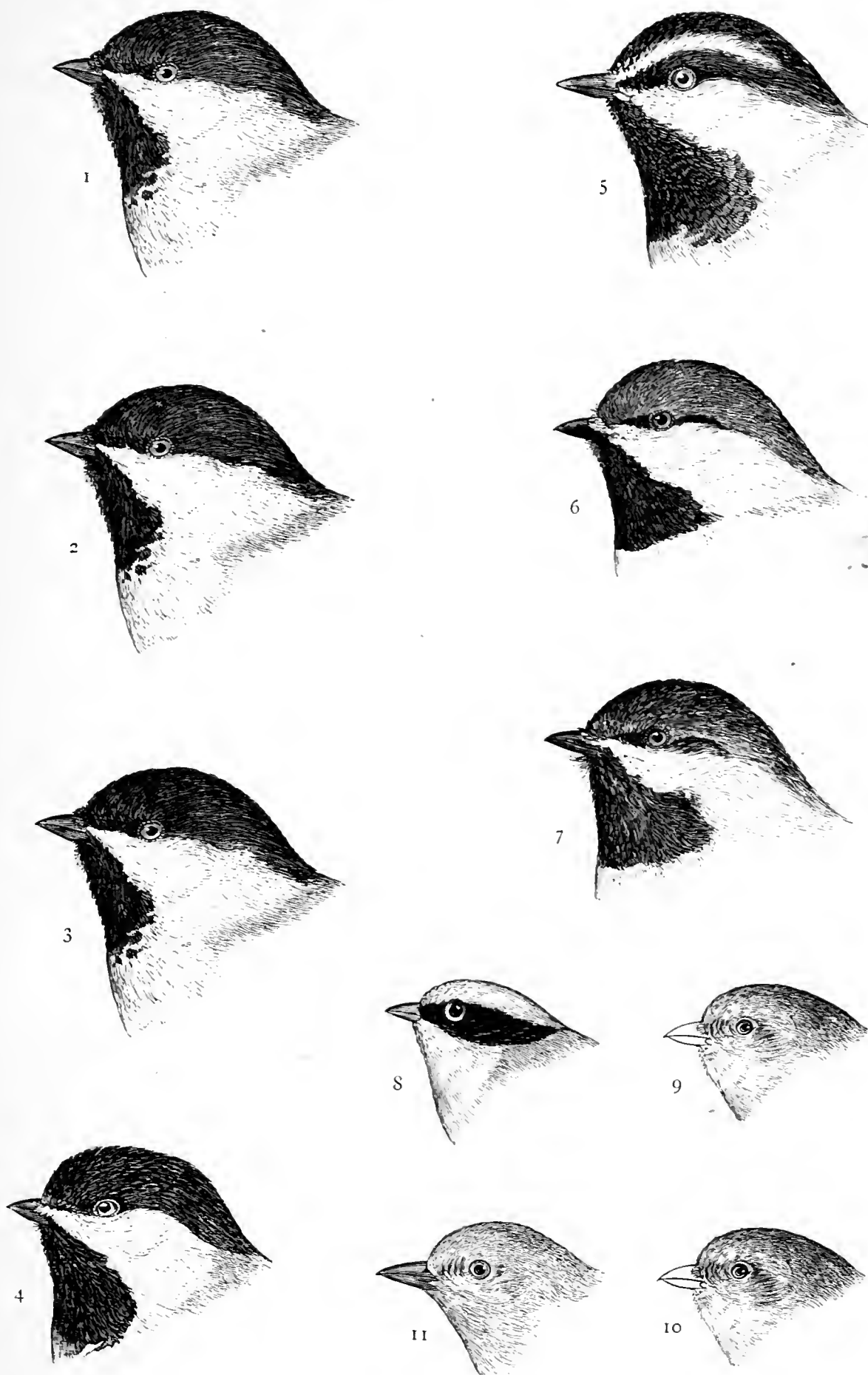
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1. *Lophophanes bicolor*, Bon. Ill., 29679.
2. " *atricristatus*, Cass. Tex., 12107.
3. " *inornatus*, Cass. Cal., 37051.
4. " *wollweberi*, Bon. Ariz., 40742.

5. *Polioptila caerulea*, Sch. Ill., 10213.
6. " *plumbea*, Baird. Ariz., 11541.
7. " *melanura*, Lawr. Cal., 7191.
8. *Chamæa fasciata*, Gamb. Cal., 5924.



PLATE VII.

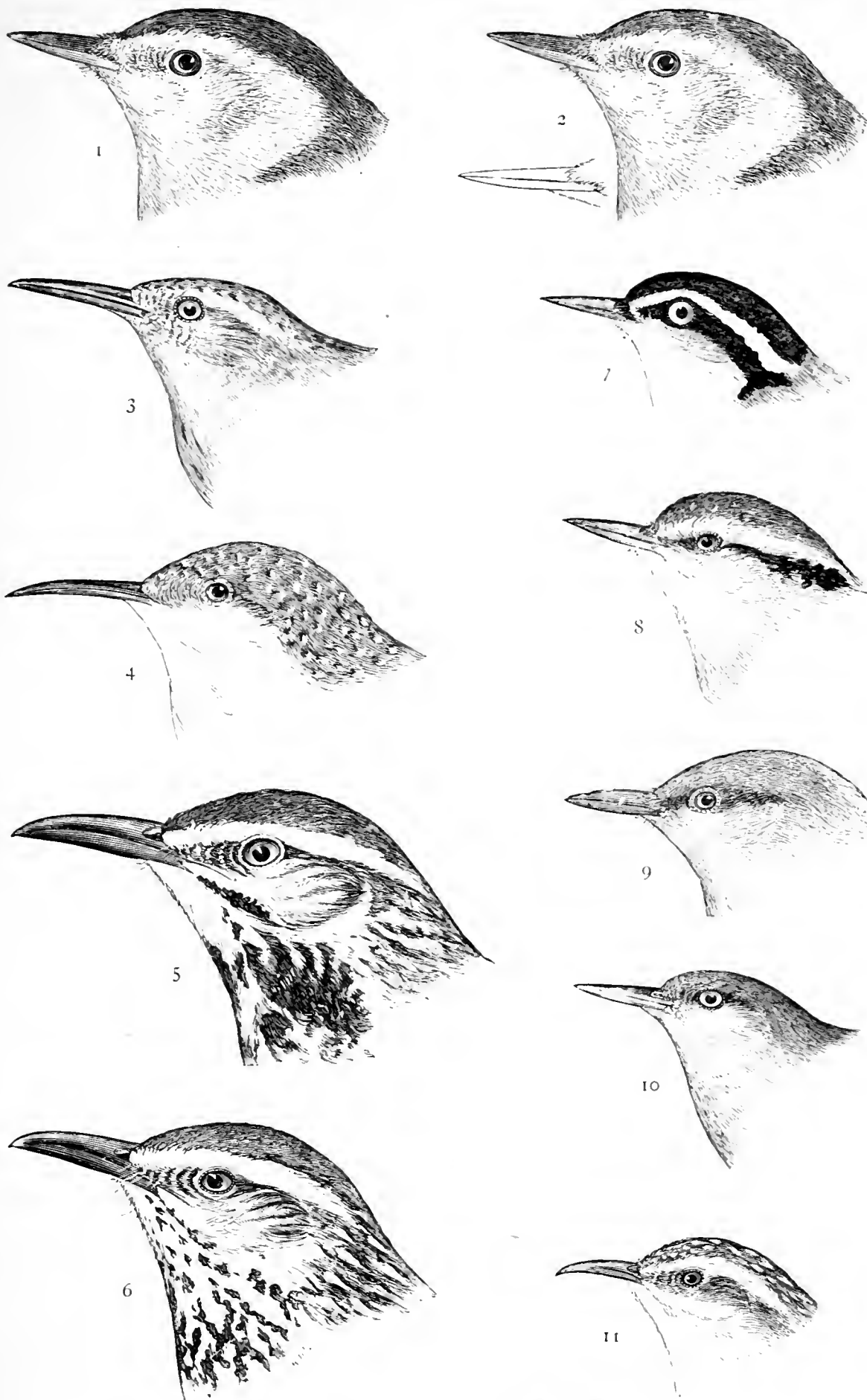


1. *Parus atricapillus*, Linn. ♂ N. York, 12851.
2. " *var. septentrionalis*, Harris. Mission Valley.
3. " *var. occidentalis*, Baird. Washington Territory.
4. " *carolinensis*, Aud. ♂ D. C., 706.
5. " *montanus*, Gambel. Nevada, 53456.
6. " *rufescens*, Towns. Pacific coast, 45946.

7. *Parus hudsonicus*, Forst. N. Scotia.
8. *Psaltiriparus melanotis*, Bon. Mexico.
9. " *minimus*, Towns. California, 22417.
10. " *var. plumbeus*, Baird. Arizona.
11. *Auriparus flaviceps* Sund. 42210.



PLATE VIII.

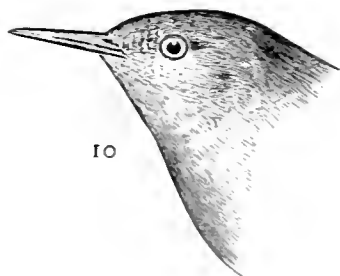
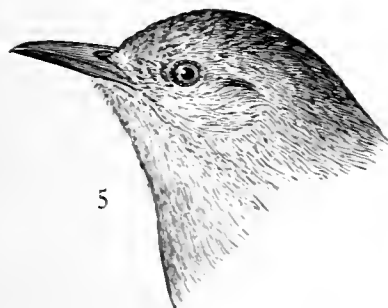
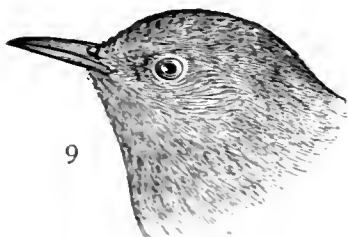
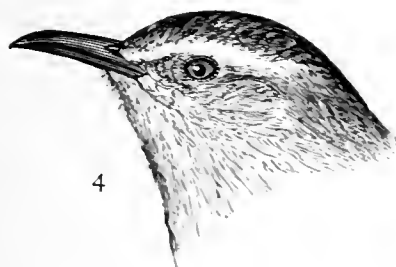
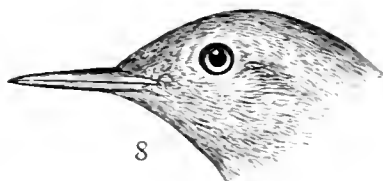
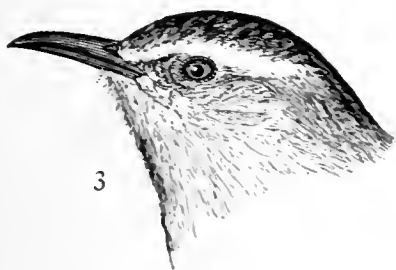
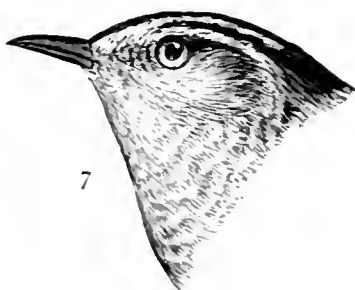
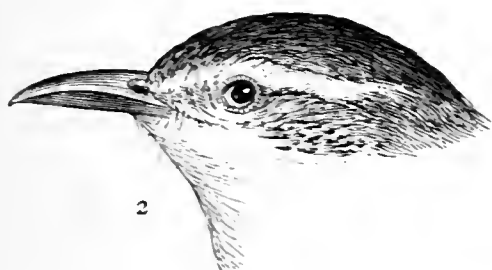
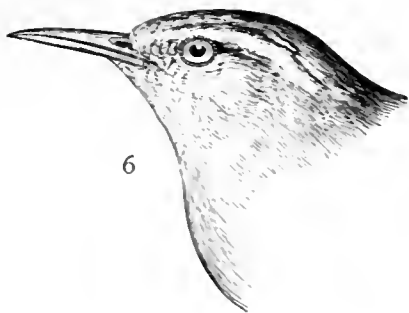
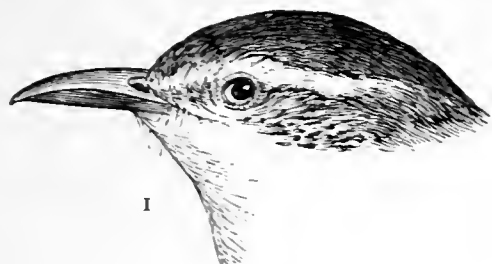


1. *Sitta carolinensis*, Gm. ♂ Pa., 59324.
2. " " " ♀
3. *Salpinctes obsoletus*, Say. Cal., 7157.
4. *Catherpes mexicanus*, Sw., var. Mex. 53427.
5. *Campylorhynchus brunneicapillus*, Laf. ♂ Cal., 7149.
6. " " " ♀ affinis, Yantus. ♂ Cape St. Lucas, 12967.

7. *Sitta canadensis*, Linn. ♂ Pa., 818.
8. " " " ♀ Pa., 2073.
9. " *pusilla*, Lath. Ga., 1925.
10. " *pygmaea*, Vig. Cal., 3342.
11. *Certhia americana*, Bon. ♂ Pa., 827.



PLATE IX.

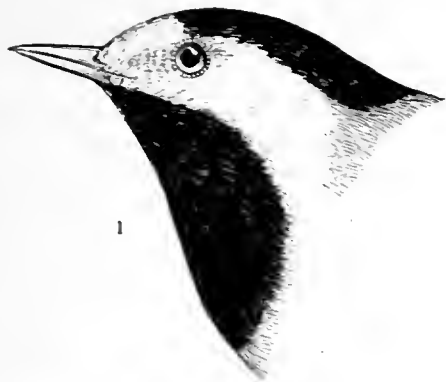


1. *Thryothorus ludovicianus*, Lath. Pa., 1784.
2. " *berlandieri*, Couch. Texas.
3. " *bewickii*, Aud. ♂ Pa., 2047.
4. " " var.
5. *Troglodytes aedon*, Vieill. D. C.

6. *Cistothorus palustris*, Wils. Pa., 1454.
7. " *stellaris*, Licht. Ga., 3073.
8. *Troglodytes alascensis*, Baird. Alaska, 5447.
9. " *hyemalis*, Vieill. ♂ Va., 31043.
10. " " var. *pacificus*, Baird. W. T., 17434.

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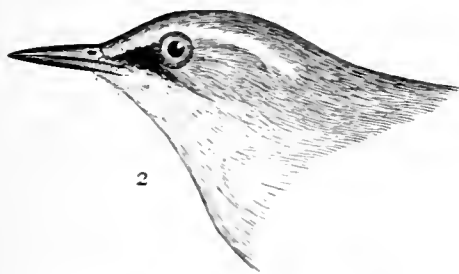
PLATE X.



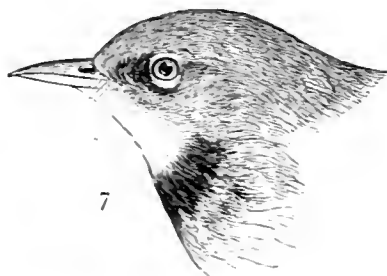
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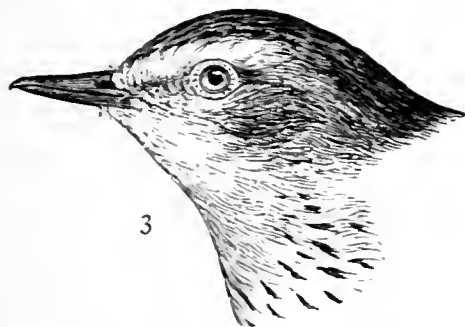
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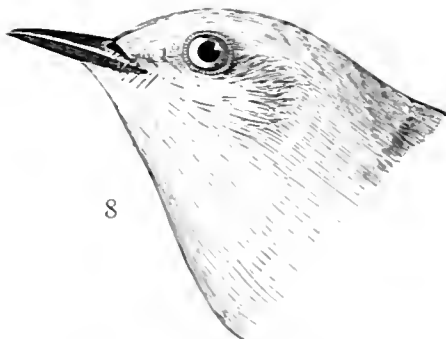
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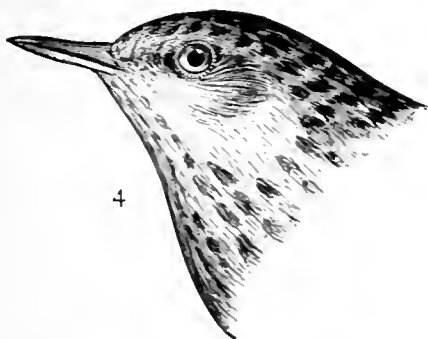
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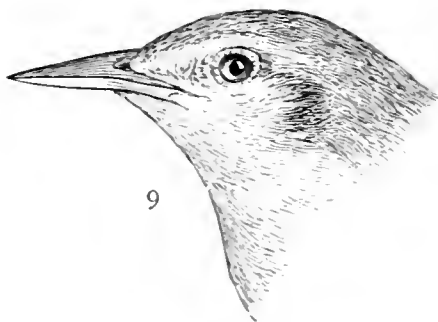
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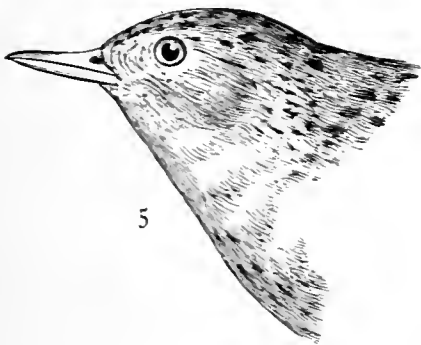
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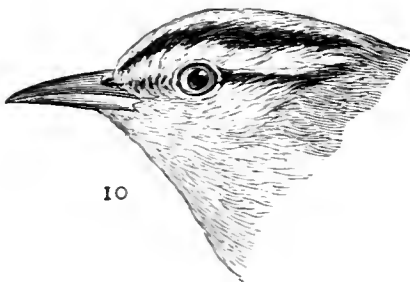
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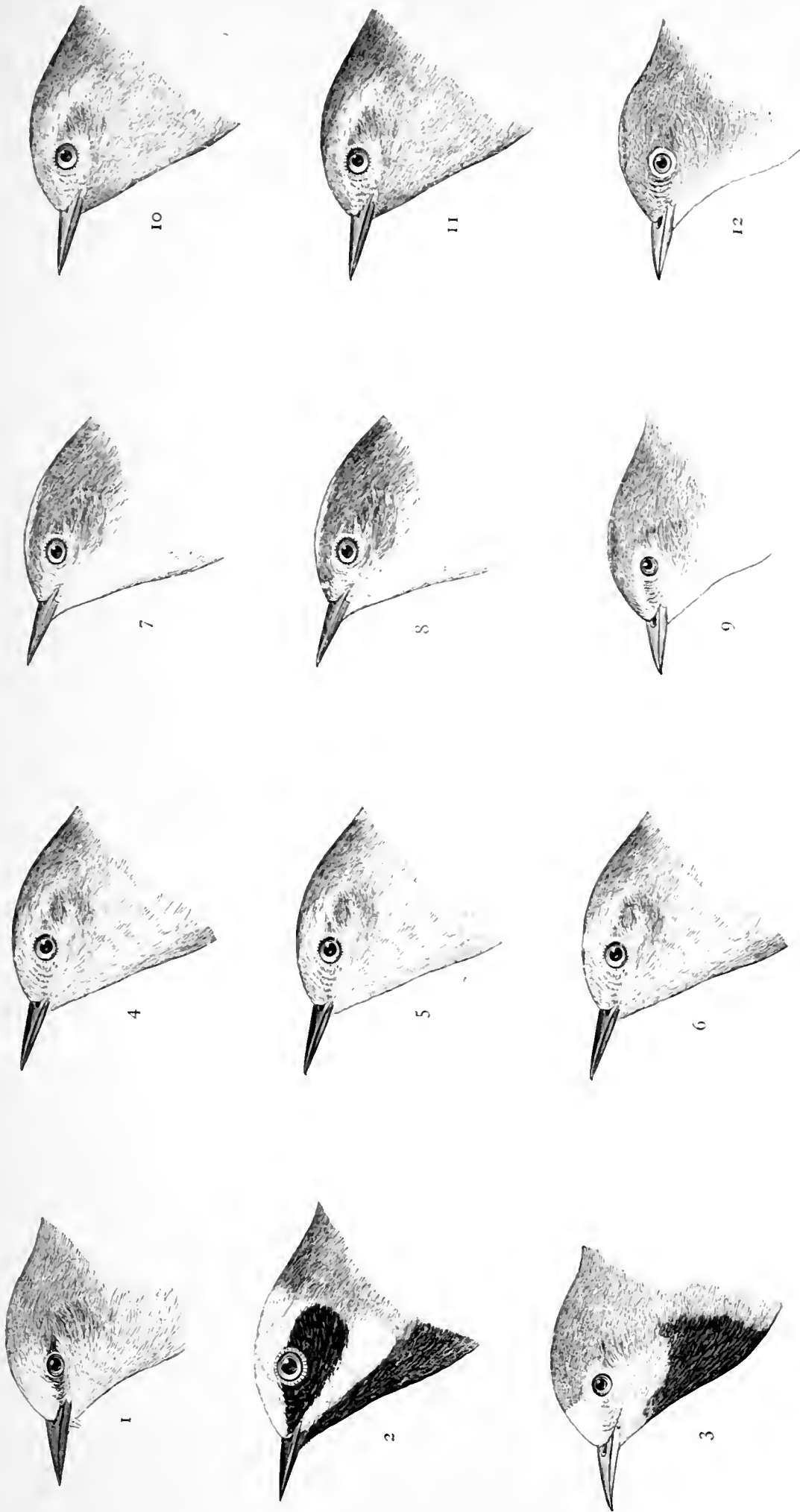
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1. *Motacilla alba*, Linn. Europe.
2. *Budytes flava*, Linn. Alaska, 45912.
3. *Anthus ludovicianus*, Gm. Labrador, 18081.
4. " *pratensis*, Linn. Europe, 18590.
5. *Neocorys spraguei*, Aud. ♀ Dakota, 1884.

6. *Mniotilta varia*, Linn. ♂ 18685.
7. *Parula americana*, Linn. ♂ Pa., 53385.
8. *Protonotaria citrea*, Bodd. Ill., 1011.
9. *Helmitherus swainsoni*, Aud. S. C., 1054.
10. " *vermivorus*, Gm. Pa., 2143.

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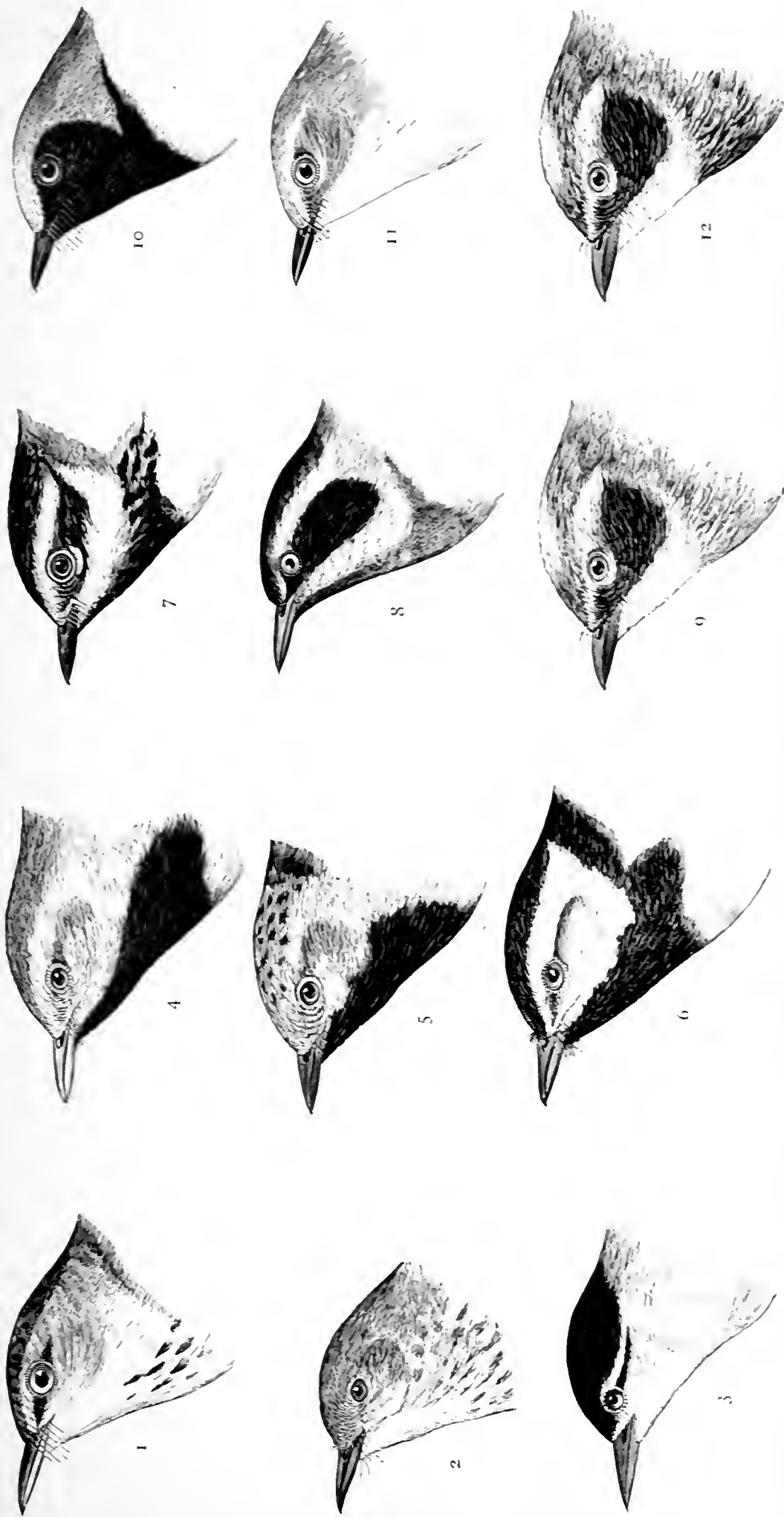
PLATE XI.



1. *Helminthophaga pinus*, *Linnaeus*, ♂ Pa., 2229.
2. " *chrysoptera*, *Linnaeus*, ♂ 10156.
3. " *bachmani*, *Audubon*, ♂ S. C., 2903.
4. *H. celata*, *Say*, var., Cape St. Lucas, 16949.
5. " " " Rocky Mts.
6. " " " Florida.
7. *H. ruficapilla*, *Wilson*, Pa., 2238.
8. " " var., Cal.
9. " *luciae*, *Cooper*, Cal., 31892.
10. *H. peregrina*, *Wilson*, 19496. In spring.
11. " " " " In autumn.
12. " *virginica*, *Audubon*, Arizona, 58334.



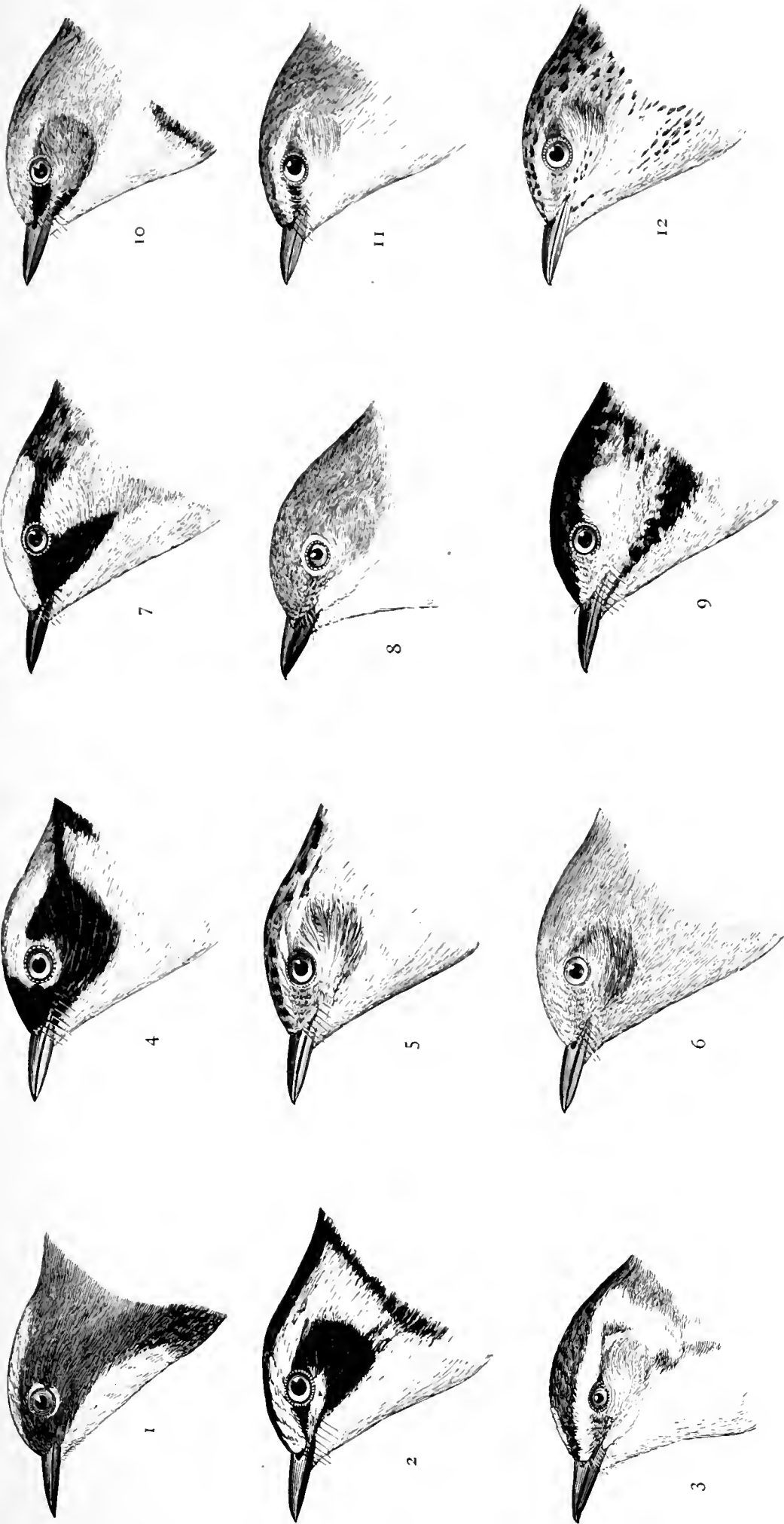
PLATE XII.



- | | | |
|----|---|---|
| 1 | <i>Perisoreus uictoriae</i> , <i>Gm.</i> | ♂ H. B. Ver., 20633. |
| 2 | " " | ♀ Pa., 678. |
| 3 | " " | carbonata, <i>Ind.</i> (Copied from Audubon.) |
| 4 | <i>Dendroica virens</i> , <i>Gm.</i> | ♂ Pa., 941 |
| 5 | " " | occidentalis, <i>Town.</i> ♂ Cal., 5518. |
| 6 | " " | chrysoparia, <i>Sci. & Art.</i> ♂ |
| 7 | <i>Dendroica townsendi</i> , <i>Nutt.</i> | ♂ Guat., 8017. |
| 8 | " " | nigrescens, <i>Town.</i> ♂ Ariz., 1998. |
| 9 | " " | coronata, <i>Imm.</i> ♂ Pa., 1384 |
| 10 | <i>Dendroica cerulea</i> , <i>Imm.</i> | ♂ Pa., 3409. |
| 11 | " " | ♀ Pa., 238. |
| 12 | " " | coronata, <i>Imm.</i> ♀ |

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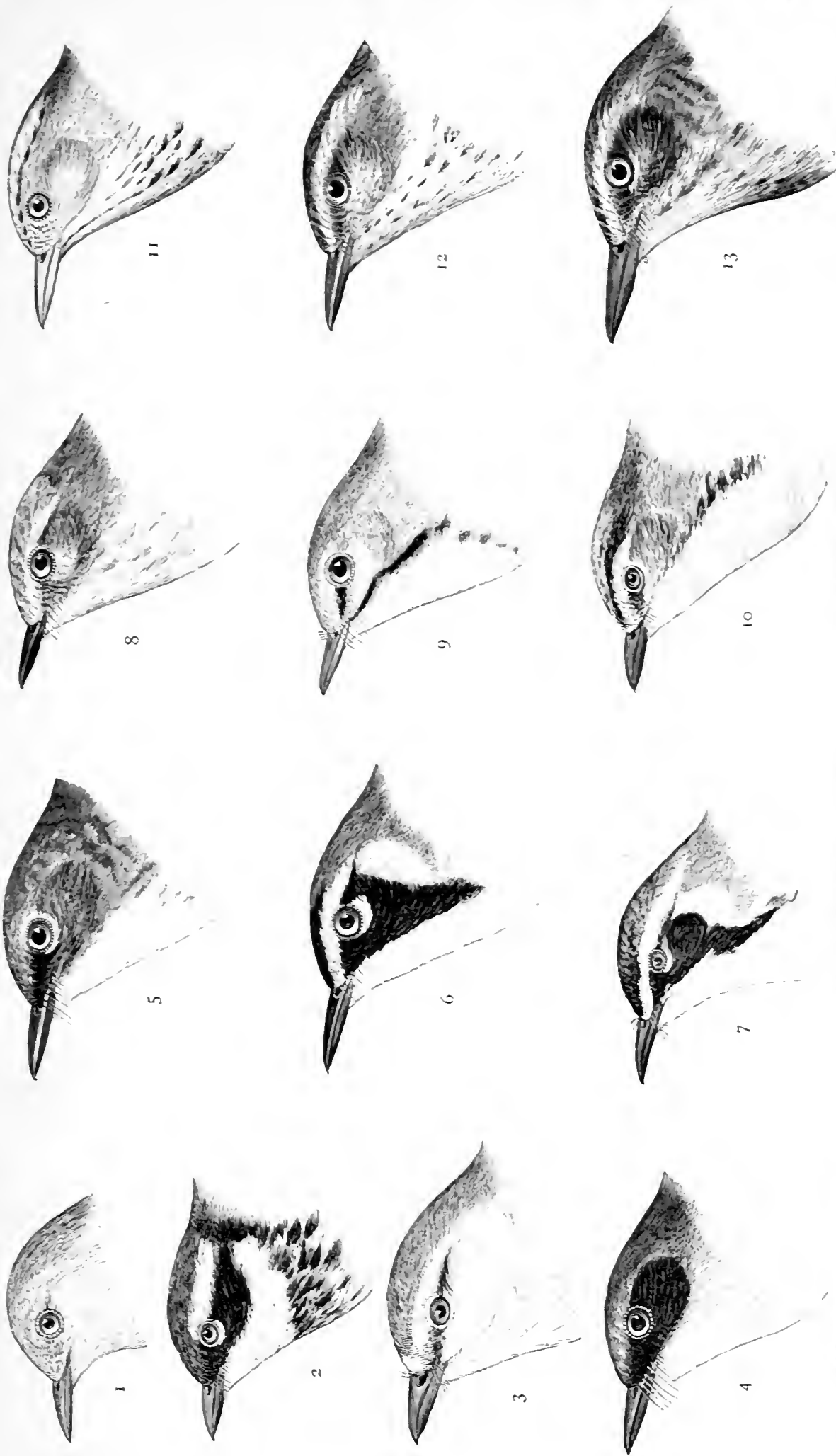
PLATE XIII.



- | | | | | | | | |
|--|----------------------|--|--------------|---|--------------|--|---------------|
| 1. <i>Dendroica auduboni</i> , <i>Townsend</i> . | ♂ Rocky Mts., 11965. | 4. <i>Dendroica castanea</i> , <i>Wilson</i> . | ♂ Pa., 2231. | 7. <i>Dendroica pennsylvanica</i> , <i>Linnaeus</i> . | ♂ Pa., 2233. | 10. <i>Dendroica cerulea</i> , <i>Wilson</i> . | ♂ Ohio, 7349. |
| 2. " <i>blackburniae</i> , <i>Gmelin</i> . | ♂ Pa., 939. | 5. " " <i>pinus</i> , <i>Wilson</i> . | ♀ Pa., 940. | 8. " " <i>striata</i> , <i>Forster</i> . | ♂ Pa., 1545. | 11. " " " " | ♀ Mo., 6980. |
| 3. " " " " | ♀ Pa., 944. | 6. " " " " | ♂ Pa., 2942. | 9. " " <i>striata</i> , <i>Forster</i> . | ♂ Pa., 1545. | 12. " " <i>striata</i> , <i>Forster</i> . | ♀ Pa., 978. |

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PLATE XIV.



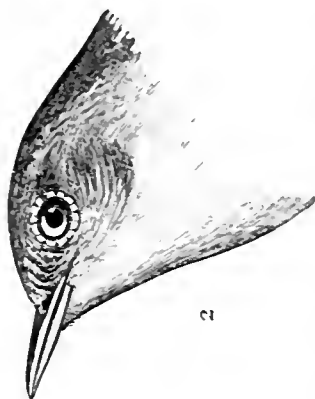
- | | | |
|---|---|---|
| 1. <i>Dendroica aestiva</i> , <i>Gm.</i> , ♂ Pa., 940. | 8. <i>Dendroica palmarum</i> , <i>Gm.</i> , ♂ N. S., 36929. | 11. <i>Sclurus urocapillus</i> , <i>Lin.</i> , ♂ Pa., 1433. |
| 2. " <i>maculosa</i> , <i>Gm.</i> , ♂ D. C., 20634. | 9. " <i>discolor</i> , <i>Vieill.</i> , ♂ Pa., 1091. | 12. " <i>novboracensis</i> , <i>Gm.</i> , ♂ Pa., 2434. |
| 3. " <i>montana</i> , (from Audubon.) | 10. " <i>gracile</i> , <i>Coues</i> , ♂ Ariz., 40680. | 13. " <i>ludovicianus</i> , <i>Aud.</i> , ♂ Pa., 964. |
| 4. " <i>olivacea</i> , <i>Grand.</i> , ♂ Mex., 30692. | | |
| 5. <i>Dendroica kirtlandi</i> , <i>Baird.</i> , ♂ Ohio, 4363. | | |
| 6. " <i>dominica</i> , <i>Lin.</i> , ♂ Ga., 3322. | | |
| 7. " <i>var. allifera</i> , <i>Ridgw.</i> , ♂ Ohio, 7701. | | |



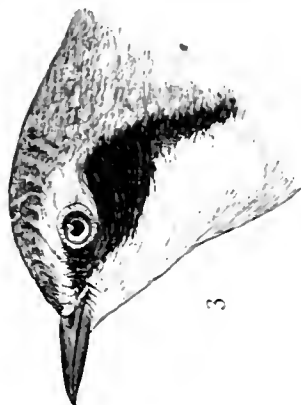
PLATE XV.



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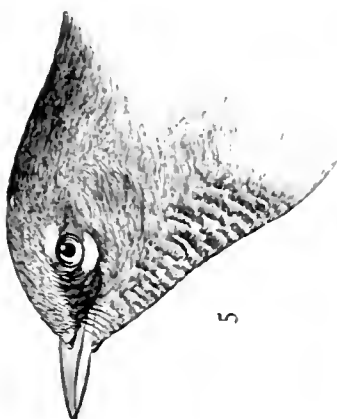
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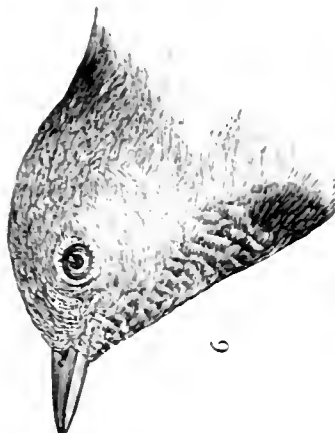
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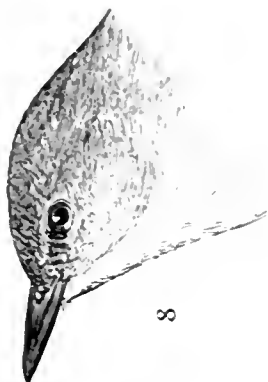
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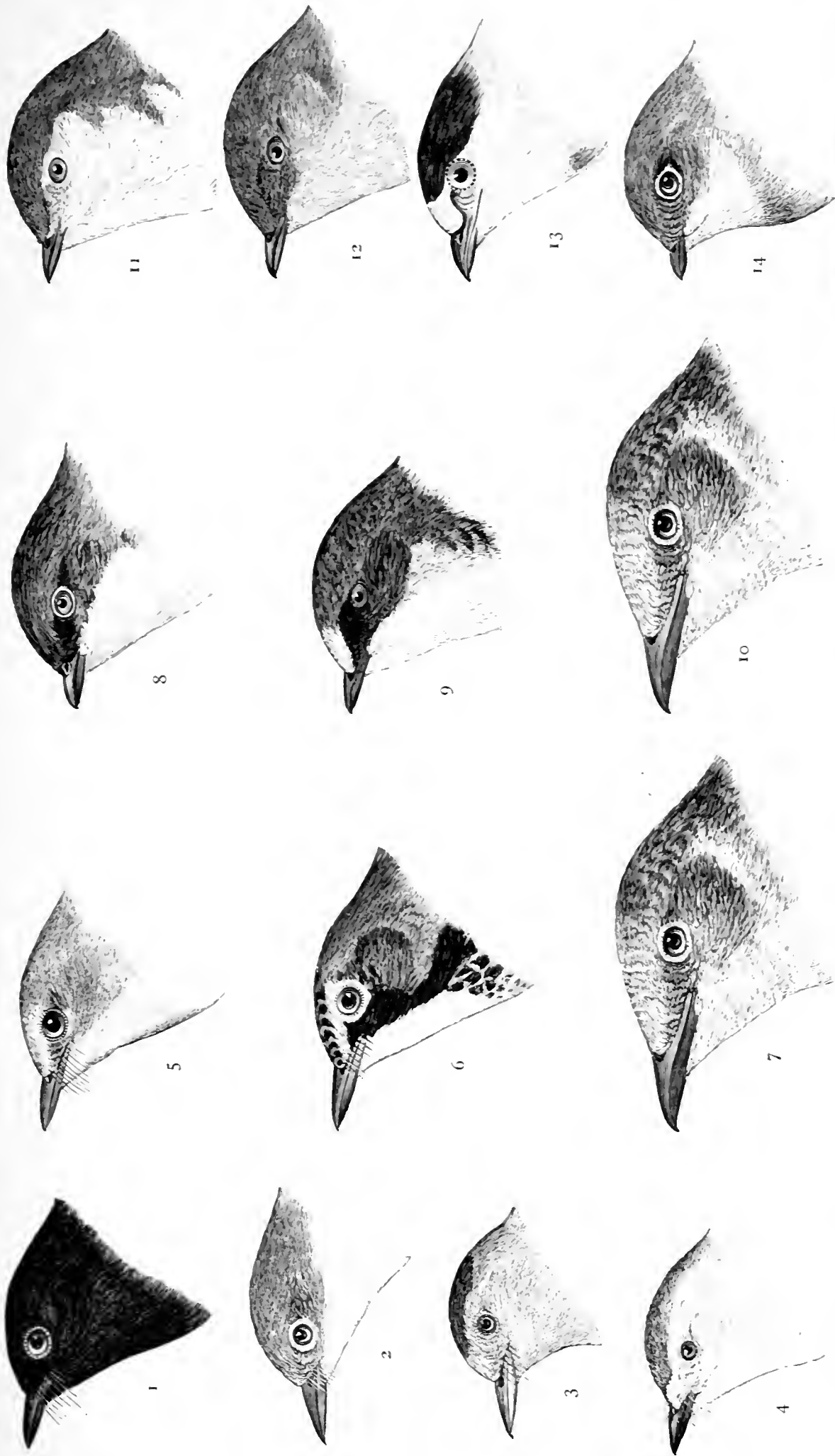


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|---|----------------|--|--|--|
| 1. <i>Oporornis agilis</i> , <i>Hills</i> , ♂ III, 3593a. | | | | |
| 2. " " " " ♀. | | | | |
| 3. " " " " ♂ III, 60873. | | | | |
| 4. <i>Geothlypis macgillivrayi</i> , <i>Aud.</i> | ♂ Oreg., 1861. | | | |
| 5. " " " " ♀. | | | | |
| 6. " " " " ♂ Pa., 689. | | | | |
| 7. <i>Geothlypis trichas</i> , <i>Linm.</i> | ♂ D. C., 2624 | | | |
| 8. " " " " ♀ Pa., 385. | | | | |
| 9. " " " " ♂ Pa., 1037. | | | | |
| 10. <i>Myiodytes miratus</i> , <i>Gm.</i> | ♂ Pa., 2226. | | | |
| 11. " " " " ♀ Pa., 2228. | | | | |
| 12. <i>Icteria virens</i> , <i>Linm.</i> | ♂ Pa., 2260. | | | |

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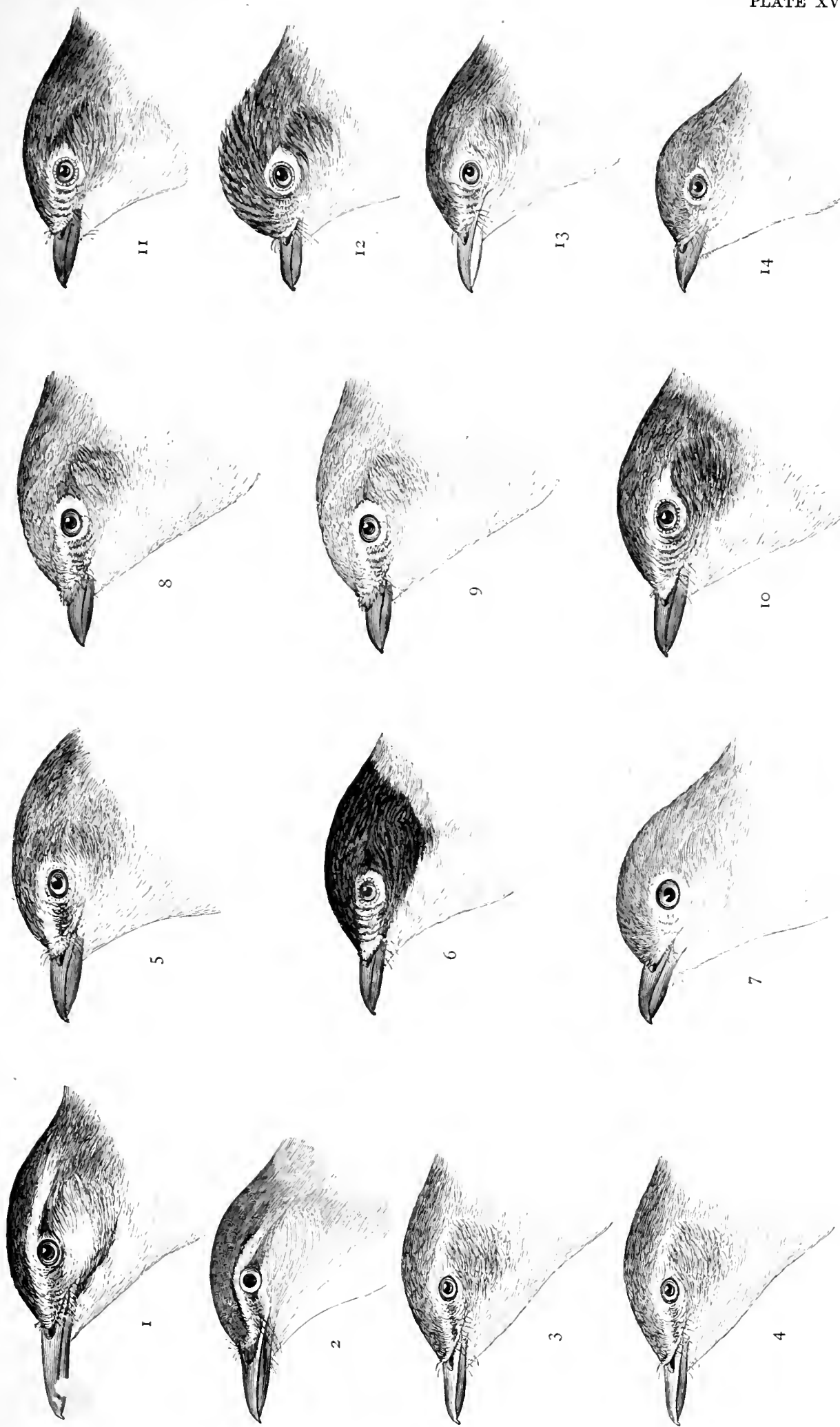
PLATE XVI.



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| 1. <i>Setophaga ruticilla</i> , Linn. ♂ Pa., 984. | 8. <i>Tachycineta bicolor</i> , Vieill. ♂ Pa., 2836. | 11. <i>Tachycineta thalassina</i> , Swainson. ♂ Oreg., 1895. |
| 2. <i>Myiodynastes minutus</i> , Aud. (Copied from Aud.) | 9. <i>Hirundo horreorum</i> , Bart. ♂ Pa., 1452. | 12. <i>Stelgidopteryx serripennis</i> , Aud. ♂ 32269. |
| 3. " pusillus, Wilson. ♂ Cal., 7684. | 10. <i>Progne subis</i> , Linn. ♂. | 13. <i>Petrochelidon lunifrons</i> , Say. ♂ 6622. |
| 4. " " " ♀ Pa., 2325. | | 14. <i>Coryle riparia</i> , Linn. ♂ 20641. |
| 5. <i>Setophaga ruticilla</i> , Linn. ♀ Pa., 2281. | | |
| 6. <i>Myiodynastes canadensis</i> , Linn. ♂ Pa., 915. | | |
| 7. <i>Progne subis</i> , Linn. ♀ 49704. | | |

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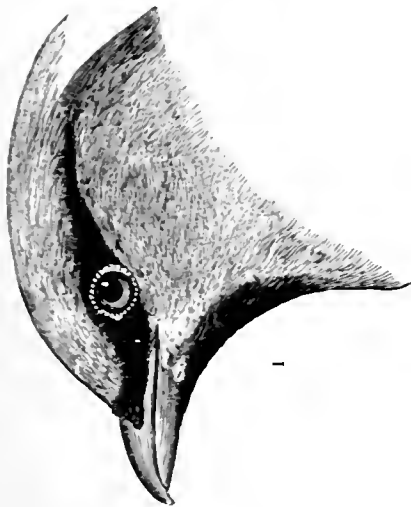
PLATE XVII.



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|---|---|--|
| 1. <i>Vireosylva barbatula</i> , <i>Caban.</i> ♂ Fla., 24282. | 8. <i>Lanius solitaria</i> , <i>Wils.</i> ♂ D. C., 37497. | 11. <i>Vireo noveboracensis</i> , <i>Gm.</i> ♂ D. C., 29243. |
| 2. " <i>olivacea</i> , <i>Linn.</i> ♂ Pa., 1440. | 9. " <i>cassini</i> , <i>Vermont.</i> ♂ | 12. " <i>huttoni</i> , <i>Cass.</i> ♂ Cal., 3725. |
| 3. " <i>gilvus</i> , <i>Vieill.</i> ♂ Pa., 988. | 10. " <i>plumbea</i> , <i>Coues.</i> ♂ Ariz., 37011. | 13. " <i>belli</i> , <i>Aud.</i> ♂ Neb., 1296. |
| 4. " <i>philadelphica</i> , <i>Cass.</i> | | 14. " <i>pusillus</i> , <i>Coues.</i> ♂ Cape St. Lucas, 16354. |
| 5. <i>Lanius flavifrons</i> , <i>Vieill.</i> ♂ Pa., 2217. | | |
| 6. <i>Vireo atricapillus</i> , <i>Hoodh.</i> ♂ Tex., 6818. | | |
| 7. " <i>vicinior</i> , <i>Coues.</i> ♂ Ariz., 40677. | | |

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PLATE XVIII.

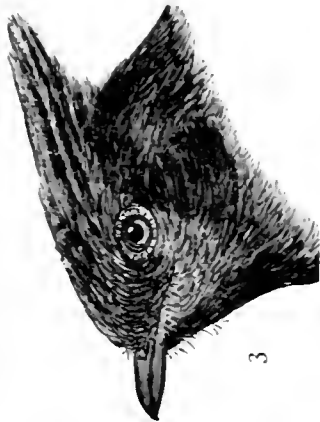


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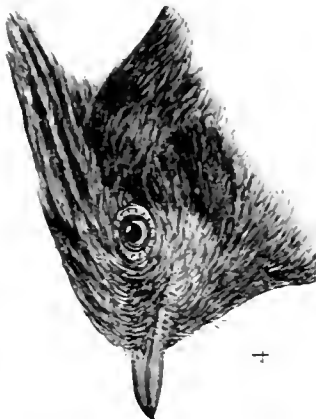


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1 *Anpelis garrulus*, *Linn.* ♂ Montana, 11055.
2. " *cedrorum*, *Vieill.* ♂ H. B. T., 42022.



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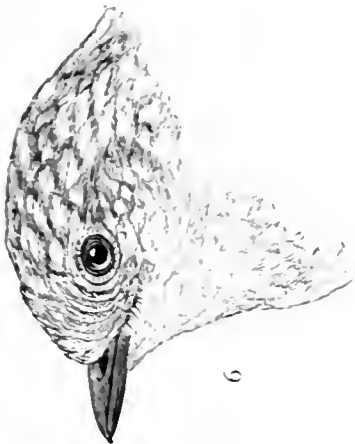


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3. *Phenopepla nitens*, *Snowius*. ♂ Cal., 8275.
4. " " " " ♀



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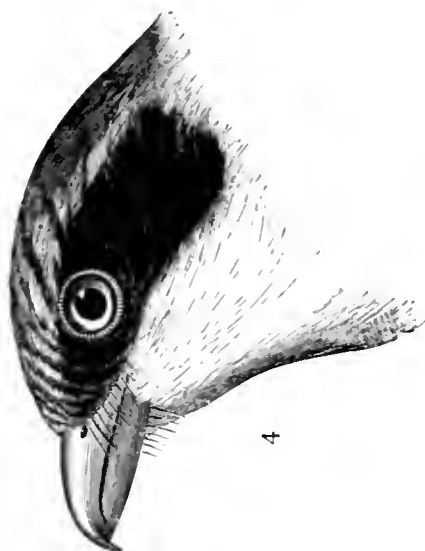
5. *Myiadestes townsendi*, *Aud.* ♂ Cal., 16168.
6. " " " " ♂ juv., N. T., 21441.

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PLATE XIX.



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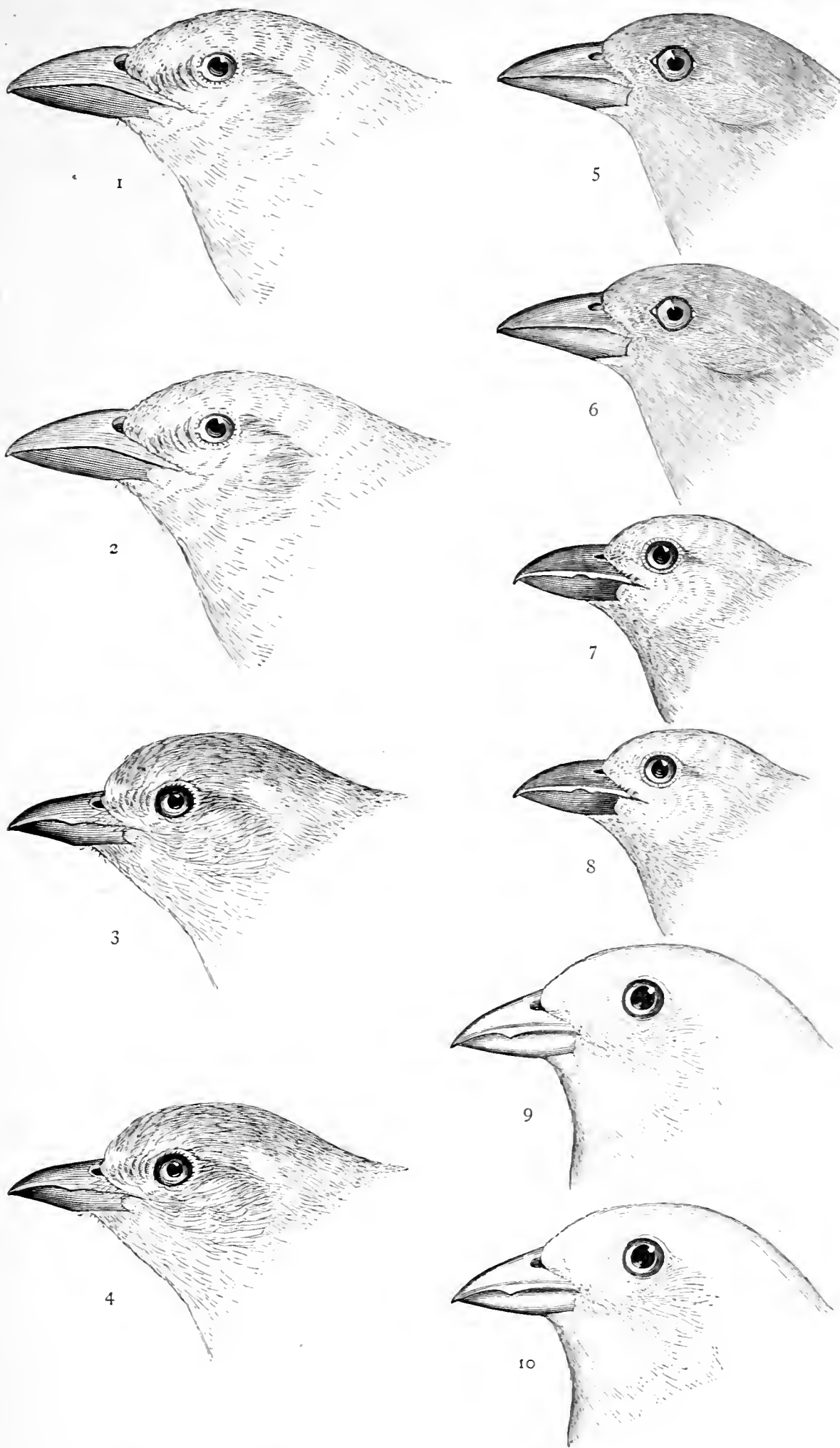
2

1. *Collurio borealis*, Vieill. ♂ H. B. T., 19549.
2. " " " " " " " " " " " "

5. *Certhiola bahamensis*, Reich. ♂ Bahamas, 1951.

3. *Collurio excubitoroides*, Swainson. ♂ Neb., 38423.
4. " *ludovicianus*, Linn. ♂.

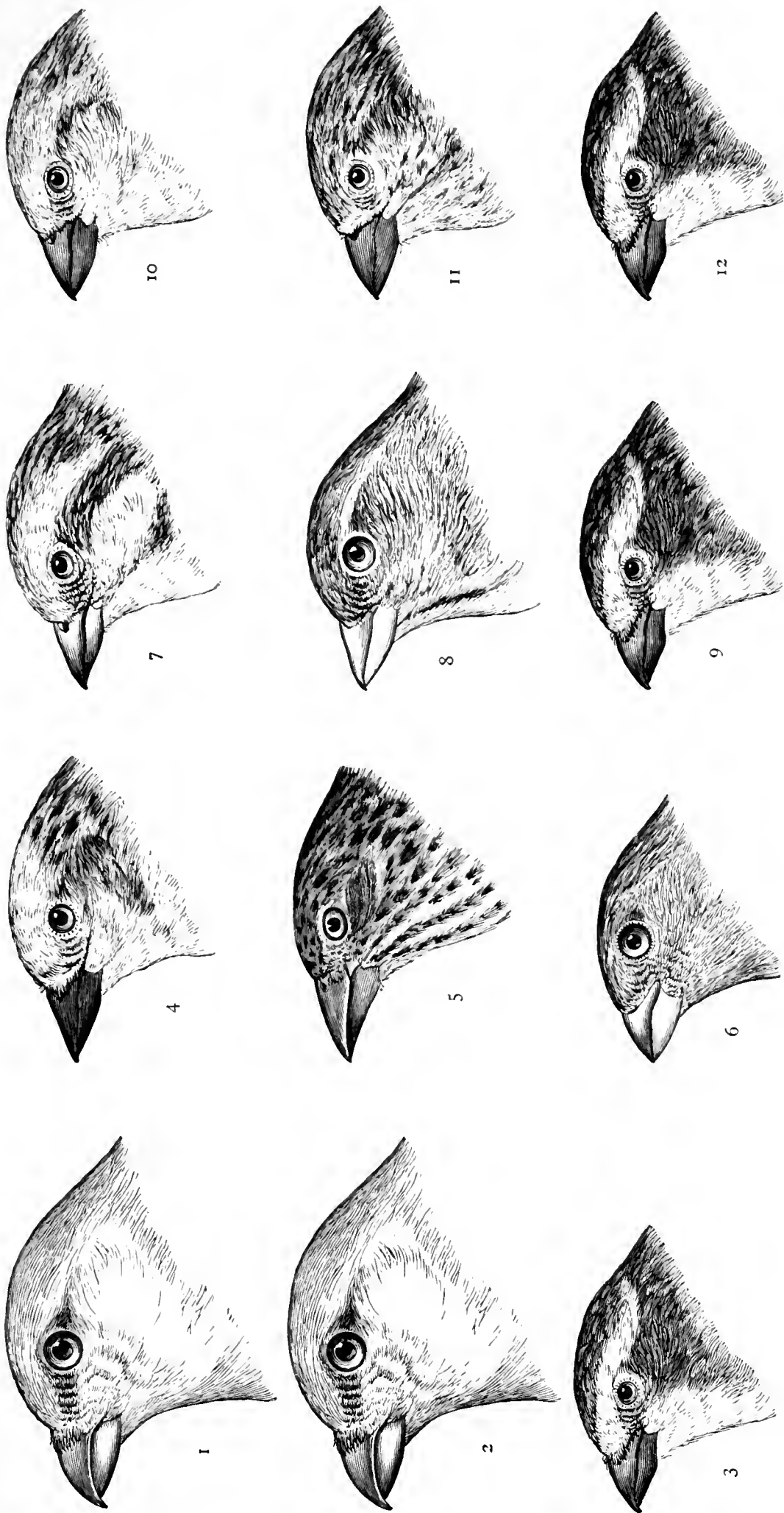
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1. *Pyrrhuloxia cooperi*, Ridgw. ♂ N. Mex., 34344
2. " " " ♀
3. " ludoviciana, Wils. ♂ Neb., 38383
4. " " " ♀
5. " æstiva, Gm. ♂ Ga., 13190.

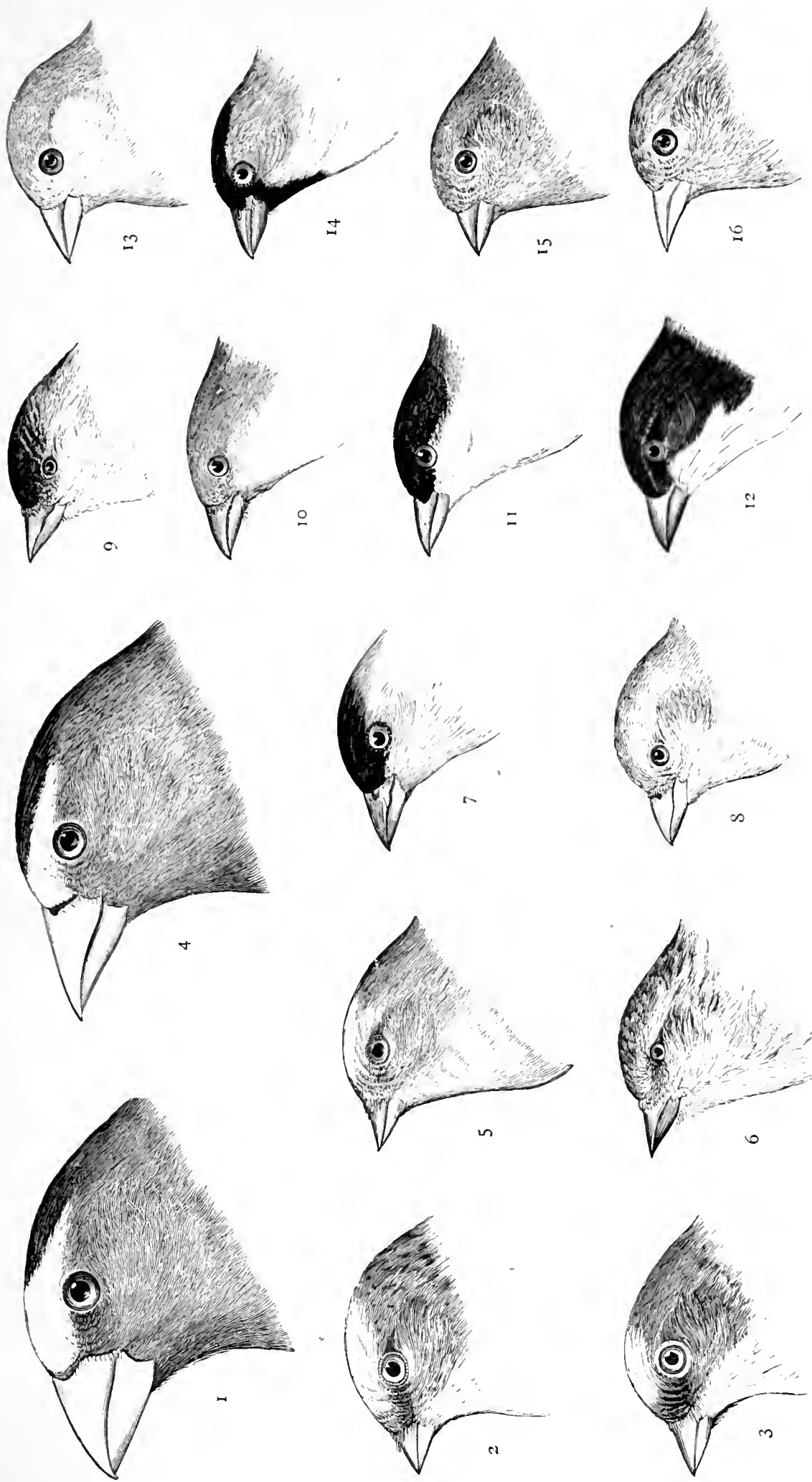
6. *Pyrrhuloxia æstiva*, Gm. ♀
7. " rubra, Linn. ♂ Iowa, 34177.
8. " " " ♀
9. " hepatica, Swains. ♂ Mex., 22414
10. " " " ♀

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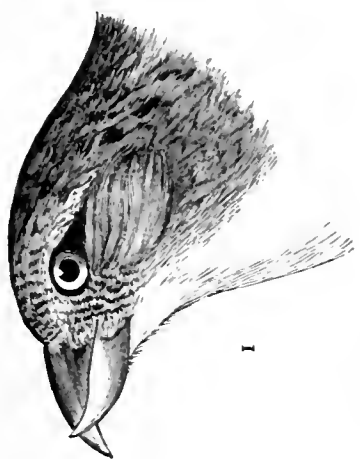
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|--|------------------------------|--------|--|--|--|
| 1. Pinicola enucleator. | ♂ N. Y., 12846 | | | | |
| 2. " | ♀ " | | | | |
| 3. Carpodacus frontalis, var. frontalis. | ♂ Cal., 10223. | | | | |
| 4. Carpodacus cassinii. | ♂ Rocky Mts., 53471. | | | | |
| 5. " | ♀ Cal., 18027. | | | | |
| 6. " | ♀ Cal., 6429. | | | | |
| 7. Carpodacus purpureus. | ♂ Pa., 796. | | | | |
| 8. " | ♀ Pa., 2139. | | | | |
| 9. " | frontalis, var. rhodocolpus. | ♂ Cal. | | | |
| 10. Carpodacus, var. californicus. | ♂ Cal., 10230. | | | | |
| 11. " | ♀ Cal., 10231. | | | | |
| 12. " | frontalis, var. hamorrhous. | ♂ Mex. | | | |

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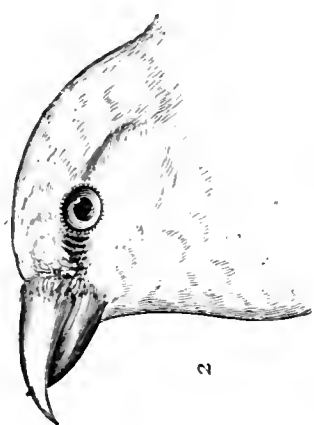


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|---|---|---|--|
| 1. <i>Hesperiphona vespertina</i> , var. <i>vespertina</i> . ♂ H. B. Ter., 16770. | 5. <i>Egiothus linaria</i> , var. <i>fuscescens</i> . Pa., 900. Winter. | 9. <i>Chrysomitris psaltria</i> . ♂ Cal., 6401. | 13. <i>Chrysomitris psaltria</i> , var. <i>mexicana</i> . ♀ Mex., 22432. |
| 2. <i>Egiothus canescens</i> , var. <i>exilipes</i> . ♂ H. B. Ter., 19686. | 6. " <i>flavirostris</i> , var. <i>brewsteri</i> . Autumn. | 10. " " " " ♀ Cal., 3930. | 14. " " " " ♂ Cal., 6405. |
| 3. " <i>linaria</i> , var. <i>fuscescens</i> . ♂ Labrador, 18098. Summer. | 7. <i>Chrysomitris tristis</i> . ♂ Pa., 1531. Summer. | 11. " " " " ♂ Pa., 37091. | 15. " " " " ♀ Cal., 40836. |
| 4. <i>Hesperiphona vespertina</i> , var. <i>montana</i> . Mex., 35150. | 8. " " " " ad. ♂ Pa., 2205. Winter. | 12. " " " " var. <i>mexicana</i> . Mex., 4078. | 16. " " " " pinus. ♂ Rocky Mts., 11095. |

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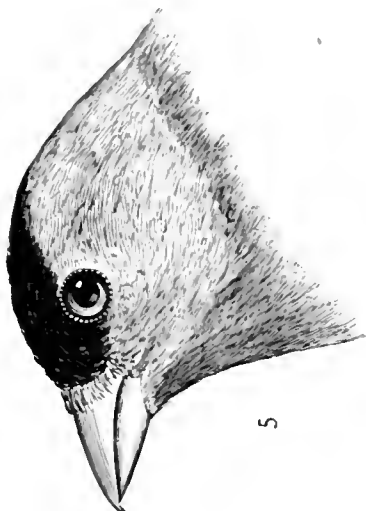
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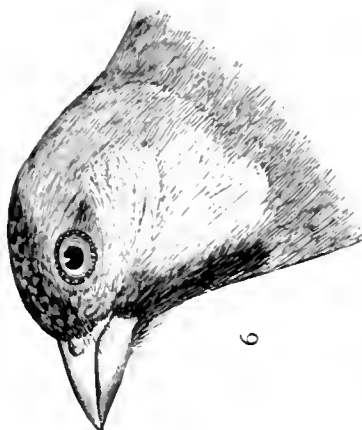
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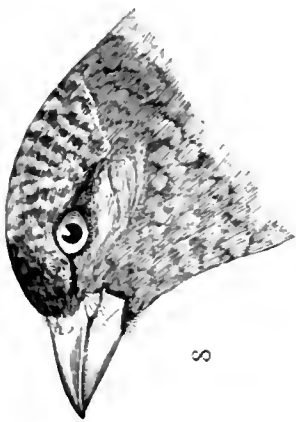
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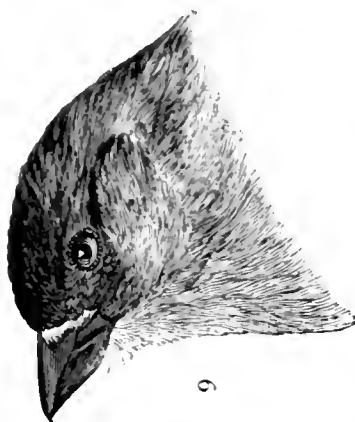
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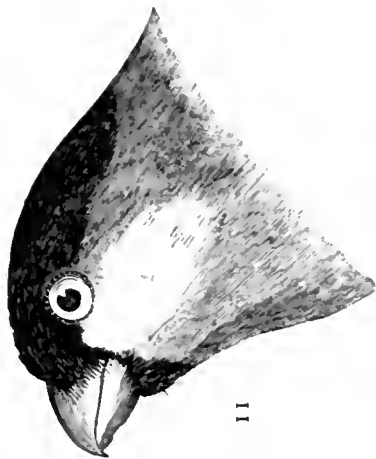
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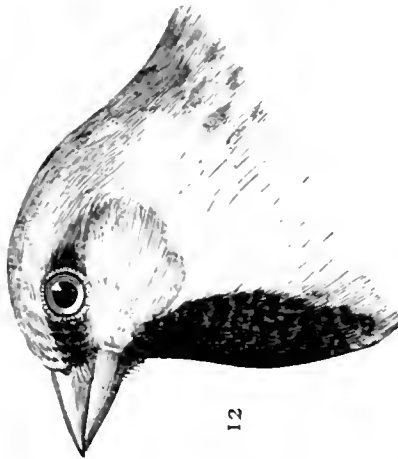
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1. *Loxia americana*, ♂ W. Ter., 6442.
2. " " ♂ Philad., 1215.
3. " " ♀ Alaska (Yukon), 27369.

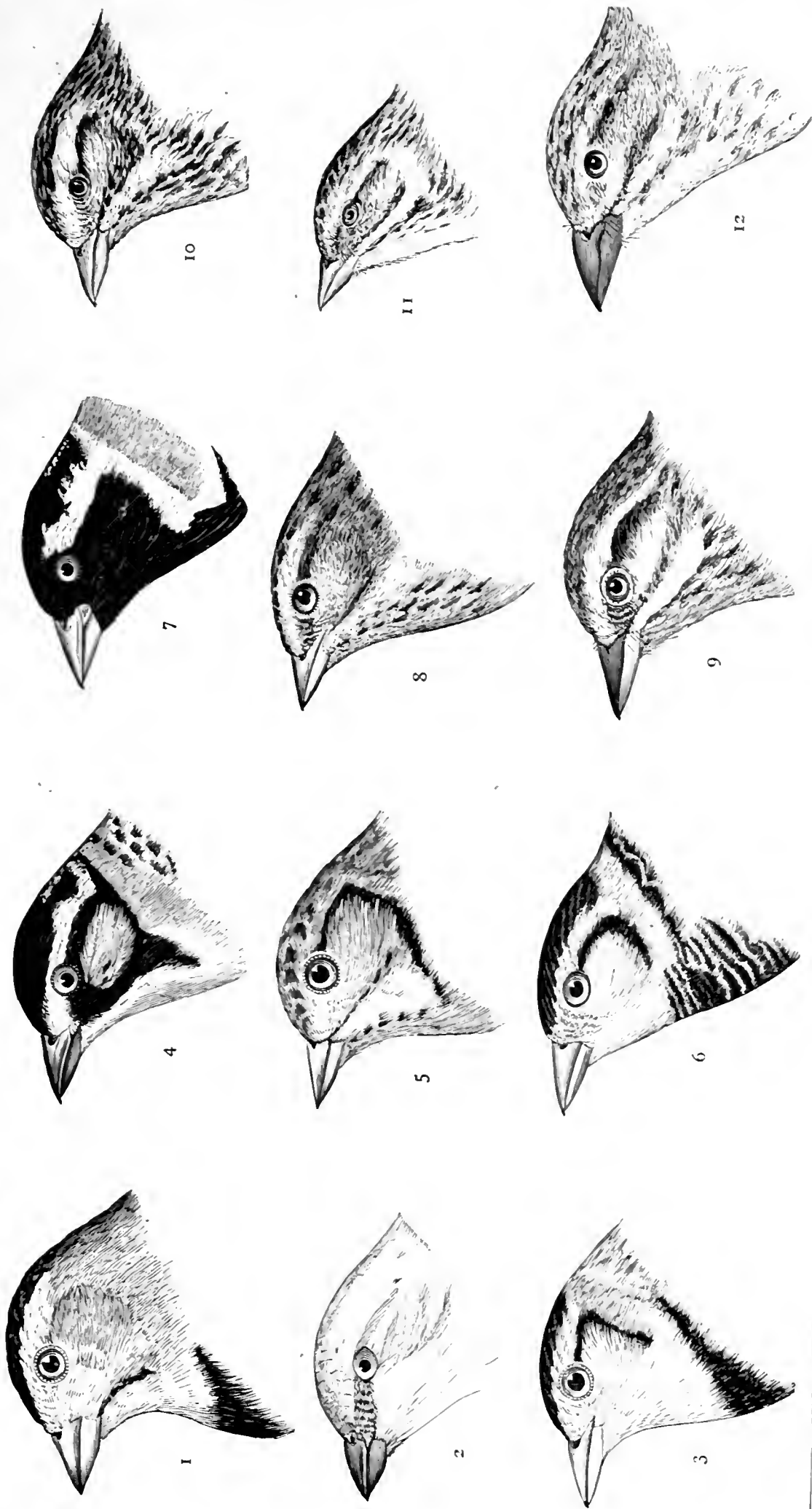
4. *Loxia americana*, ♀.
5. *Leucosticte griseinucha*, ♂ Unalaska, 54244.
6. " " littoralis, Ft. Simpson, V. I.

7. *Leucosticte campestris*, Colorado, 41527.
8. " " tephrocotis, Nebraska, 10255. Winter.
9. " " Colorado, Summer.

10. *Leucosticte arctous*, Siberia, 9244.
11. *Pyrrhula cassinii*, ♂ Alaska (Nulato), 49955.
12. *Pyrgita domestica*, Europe.

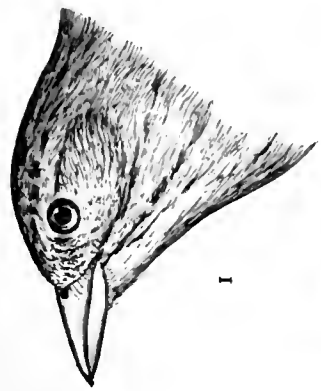
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PLATE XXIV.



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| 1. <i>Plectrophanes naccowii</i> . ♂ Dakota, 35951. | 7. <i>Plectrophanes lapponicus</i> . ♂ Ft. Resolution, B. A., 19647. | 10. <i>Passerculus anthinus</i> , Cal. (Petaluma), 5555. |
| 2. " " ♂ Ft. Resolution, B. A., 19632. | 8. <i>Passerculus savanna</i> . D. C., 10145. | 11. " alaudinus. Utah, 53483. |
| 3. " " ♂ Ft. Union, Dakota, 1997. | 9. " sandwicensis. Washington Terr., 6343. | 12. " rostratus. Cal. (San Diego), 6340. |
| 4. <i>Plectrophanes pictus</i> . ♂ Ft. Simpson, B. A., 19659. | | |
| 5. " " ♀ 19664. | | |
| 6. " melanopus. ♂ Dakota, 35359. | | |

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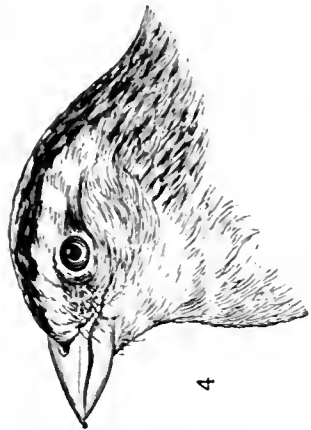
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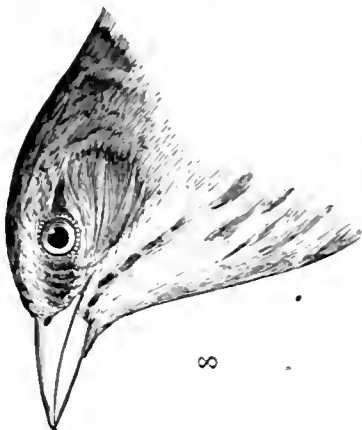
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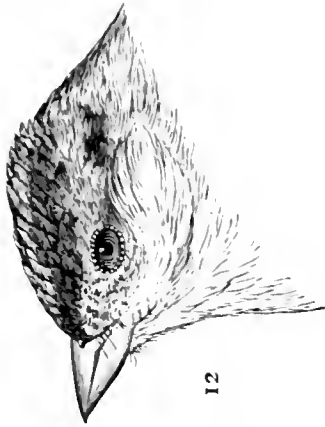
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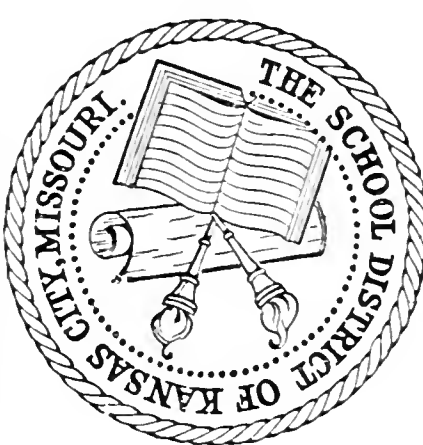
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11. " " ♂ ad., Nev., 53595.
12. " " ♂ juv., Nev., 53500.

7. *Ammodramus caudatus*. N. J., 609.
8. " maritimus. Pa.
9. *Zonotrichia leucophrys*. ♂ juv., 817.

4. *Coturniculus passerinus*. Ga., 22405.
5. " leucolus. S. Ill., 6191.
6. " lecontei. Texas, 5022.

1. *Passerculus guttatus*. Cape St. Lucas, 26615.
2. " princeps. Ipswich, Mass. (Type.)
3. *Centronyx bairdii*. Ft. Union, Dakota, 1885.

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